BenchMark Wireline Products
36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.346.4300
Fax: 281.346.4301
benchmarkwireline.com

OPERATIONS AND MAINTENANCE MANUAL
WINCH OPERATORS PANEL
AMS4A099

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36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.346.4300
Fax: 281.346.4301
benchmarkwireline.com

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Manual Revision Log

Current Revision	**B**	**SEP 2009** **Added ATEX information and final certification** **Added software update – support for MAKO and AM5K measuring heads** **Updated BOM** **Updated software to Ver 2.02**
Previous Revision	**A**	**NOV 2008** **Initial Draft**

1.0 INTRODUCTION

1.1 GENERAL DESCRIPTION

This panel is used to acquire and display depth and tension data from a wireline logging winch unit. The panel provides the operator a means to set and make adjustments to the data as necessary. Depth is displayed from data provided from an encoder mounted on a measuring device. The tension data is provided by a load pin and is also passed through to the acquisition system. The panel will operate with the BenchMark Dual Wheel Measuring Devices for slick line, braided line, and cased hole e-line services.

The system consists of two main components, the real time acquisition board and the PC. The acquisition board provides power to and processes the signals from the encoders, load pin, and magnetic mark detector. This board operates independent from the PC and is instantly on when power is applied. It also is connected to displays for depth and tension. This allows depth and tension to be displayed immediately on power up and always be displayed regardless of the PC status.

The PC uses an Intel based high speed processor running MS Windows XP embedded. The PC includes a color touch screen for operator input and command entry. The PC is Ethernet ready for connection to the internet for remote display and control.

1.2 ATEX STANDARDS & REQUIREMENTS

PRODUCT SUMMARY

The AMS4A099 Panel is used to acquire and display depth and tension data from a wireline logging winch unit and panel provides the operator a means to set and make adjustments to the data as necessary.

PRODUCT CERTIFICATION & CODING

II 3 G Ex nR II T6 T_{amb} -20°C to +40°C

INSTALLATION INSTRUCTIONS

Warnings:

- The apparatus is ATEX CAT3, only to be installed in Hazardous Area Zones 2.
- The installer is to ensure that the equipment is located in areas that are known not to have an adverse affect on the housing material.
- Do not modify the enclosure as this will compromise the apparatus certificate.

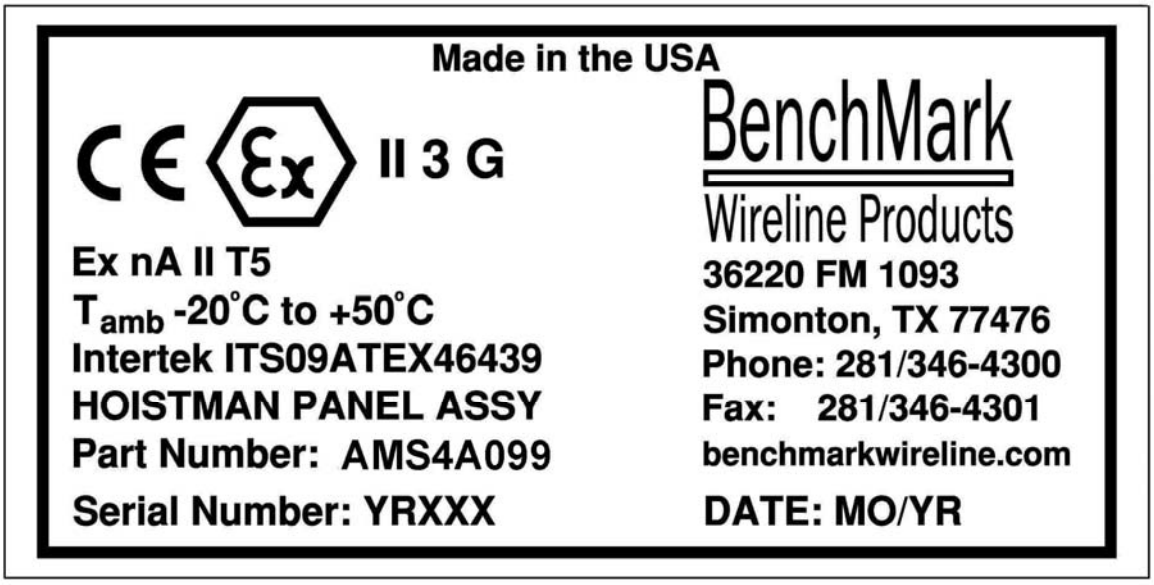
Hazardous Area Installation Standards & Requirements:

The installer should refer to the latest edition of the following standards before operating in a Hazardous Area:

EN 1127-1	Explosive Atmospheres - Explosion prevention and protection, basic concepts and methodology.
EN 60079-14	Electrical apparatus for explosive gas atmospheres Part 14:Electrical installations in hazardous areas (other than mines)
EN 60079-17	Electrical apparatus for explosive gas atmospheres – Part 17:Inspection and maintenance of electrical installations in hazardous areas (other than mines)

Hazardous Area Preparation & Installation - Refer to section 1.7
Operational Parameters - Refer to Section 3.0
Maintenance - Refer to Section 6.0

ATEX Label Details and Information



The following standards have been applied in the certification of this device:

EN60079-0:2006 – Electrical apparatus for explosive gas atmospheres – Part 0: General requirements

EN60079-15:2005 – Electrical apparatus for explosive gas atmospheres – Part 15: Construction, test and marking of type of protection “n” electrical apparatus.

1.3 TYPE EXAMINATION CERTIFICATES

Intertek

1. TYPE EXAMINATION CERTIFICATE

2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**

3. Type Examination Certificate Number: **ITS09ATEX46439**

4. Equipment or Protective System: **AMS4A090/ AMS4A095/ AMS4A099 Slickline Hoistman's Touch Screen Panel**

5. Manufacturer: **BenchMark Wireline Products**

6. Address: BenchMark Wireline Products, 36220 FM 1093, Simonton, Texas 77476, USA.

7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8. Intertek Testing and Certification Limited certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive 94/9/EC of 23 March 1994

   The examination and test results are recorded in confidential Report: 09039450A1, dated August 2009.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN60079-0:2006 and EN60079-15:2005 except in respect of those requirements referred to at item 16 of the Schedule.

10. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11. This Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12. The marking of the equipment or protective system shall include the following:-

Ex II 3 G Ex nA II T5 T_{amb} -20°C to +50°C

Intertek Testing & Certification Limited
Deeside Lane, Chester, CH1 6DD
Tel: + 44 (0)1244 882590 Fax: +44 (0)1244 882599
http://www.Intertek.com
Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

P Moss
Certification Officer
Date: 23rd November 2009

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Sheet 1 of 3

Type Examination Certificate ITS09ATEX46439 Issue 3 March 2009

Intertek

SCHEDULE
TYPE EXAMINATION CERTIFICATE NUMBER : ITS09ATEX46439

13. Description of Equipment or Protective System

The AMS4A095 and AMS4A099 Slickline Hoistman's Touch Screen Panel is an interface panel used to acquire, display and transmit tool depth and tension data from a wireline logging winch unit. The panel provides the operator a means to set and make adjustments to the data as necessary.

The AMS4A090 Rig Floor Display Panel is an interface panel used to provide a remote display of logging tool depth, line speed, surface tension, and down hole tension. It is typically placed on the rig floor to provide this information to the driller to monitor this information in real time.

The AMS4A090, AMS4A095 and AMS4A099 share the same enclosure but have different numbers of I/O's. The enclosure measures approximately 275mm x 230mm x 120mm.

14. Report NUMBER

Intertek Report Ref 09039450, dated August 2009.

15. CONDITIONS OF CERTIFICATION:

a. Special Conditions for safe use

There are no special conditions for safe use.

b. Conditions For Use (Routine Tests)

There are no conditions for safe use

16. Essential Health and Safety Requirements (EhsR's)

The relevant EHSR's that have not been addressed by the standards listed in this certificate have been identified and assessed in Intertek Report Ref 09041646, dated August 2009.

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SCHEDULE
TYPE EXAMINATION CERTIFICATE NUMBER : ITS09ATEX46439

17. DRAWINGS

Number	Issue	Date	Description
AMS4A099B	-	08/24/09	AMS4A099B WATERPROOF TOUCH SCREEN BILL OF MATERIALS
AMS4A099	B	8/24/09	PANEL TOUCH SCREEN WATERPROOF PORTABLE SHEET 1 OF 2
AMS4A099	B	8/24/09	PANEL TOUCH SCREEN WATERPROOF PORTABLE SHEET 2 OF 2
AMS4A095C	-	8/20/09	AMS4A095C WATERPROOF TOUCH SCREEN BILL OF MATERIALS
AMS4A095	C	8/20/09	PANEL TOUCH SCREEN WATERPROOF PORTABLE SHEET 1 OF 2
AMS4A095	C	8/20/09	PANEL TOUCH SCREEN WATERPROOF PORTABLE SHEET 2 OF 2
AMS4A090A	-	10/14/09	AMS4A090A DISPLAY RIG FLOOR 8" TOUCH 24VDC CAN BUS BILL OF MATERIALS
AMS4A090	A	10/13/09	DISPLAY RIG FLOOR WATERPROOF Ex nA ITS09ATEX46439 SHEET 1 OF 2
AMS4A090	A	10/13/09	DISPLAY RIG FLOOR WATERPROOF Ex nA ITS09ATEX46439 SHEET 2 OF 2
AMS4M691	A	8/26/09	LABEL HOIST PANEL ITS09ATEX46439 Ex nA SHEET 1 OF 1

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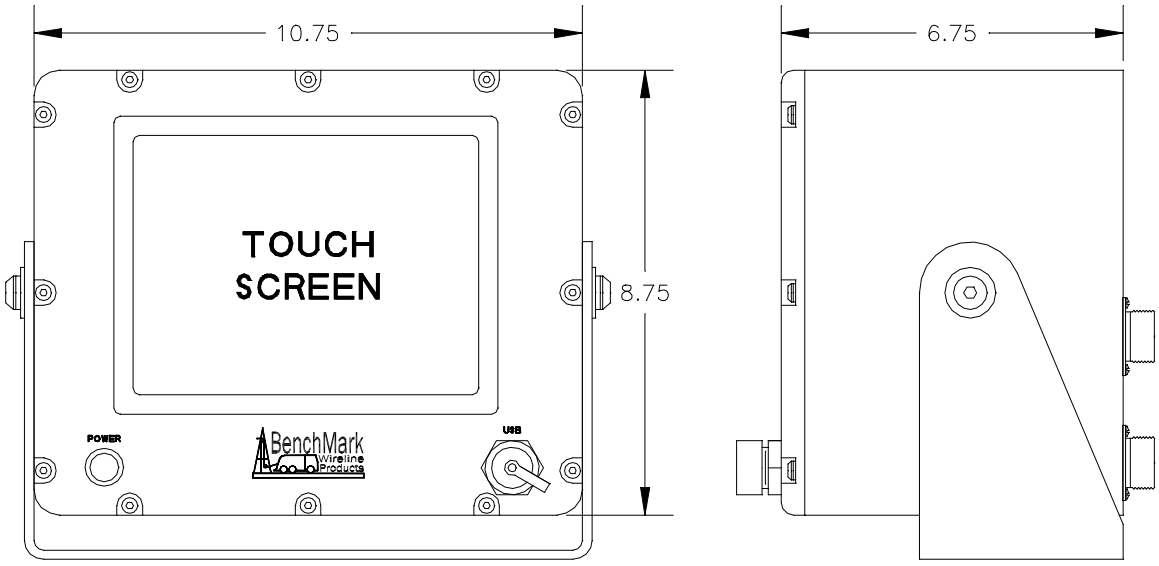
1.4 TECHNICAL SPECIFICATIONS



WEIGHT:

PANEL ONLY:	10 LBS	4.55 KG

POWER REQUIREMENTS:

INPUT VOLTAGE:	12 – 24VDC
INPUT CURRENT:	4 AMPS STARTUP SURGE
	3 AMPS NORMAL OPERATION

OPERATING TEMPERATURE

Min	Max	
14	149	degrees F
-10	65	degrees C

STORAGE TEMPERATURE

Min	Max	
-22	158	degrees F
-30	70	degrees C

1.5 HARDWARE FEATURES

12 - 24 VDC Power Input

Internal PC board
- Intel based personal computer board
- 4 gb solid state media device
- Embedded windows XP operating system
- Three USB ports (One inside, one in front, and one on brake outbox)
- 1 RS232 port
- RJ 45 Ethernet port
- USB Mouse / Keyboard included

Color Display
- TFT LCD
- Backlit
- 400 NITS Sunlight readable

Touch Screen Interface (replaces current key pad)
- 5 wire resistive
- USB interface

Real Time Acquisition board
- Kerr Measurement Systems proprietary design
- 8051 Microprocessor based
- Provides power to encoders, load cell
- Processes encoder quadrature, load cell
- Runs independent of PC board
- Connected to digital displays for real time display of depth and tension

Overtension Relay Contact Closure output

Analog output interface
- Encoder quadrature output
- 0 – 10vdc tension output
- 4-20ma tension output

Dual Pressure signal inputs

1.6 USER INTERFACE FEATURES

Total Tension numeric graphic
Incremental or Differential tension meter graphic
Meter reset button graphic (touch screen control)

Over_tension Warnings and Shutdown settings for both Differential and Total Tension readings (touch screen activated)

Tension Calibration Setup Window (touch screen control)

Encoder Resolution Settings (PPR value set by touch screen control)

Approaching Surface

Max Depth

Set Down

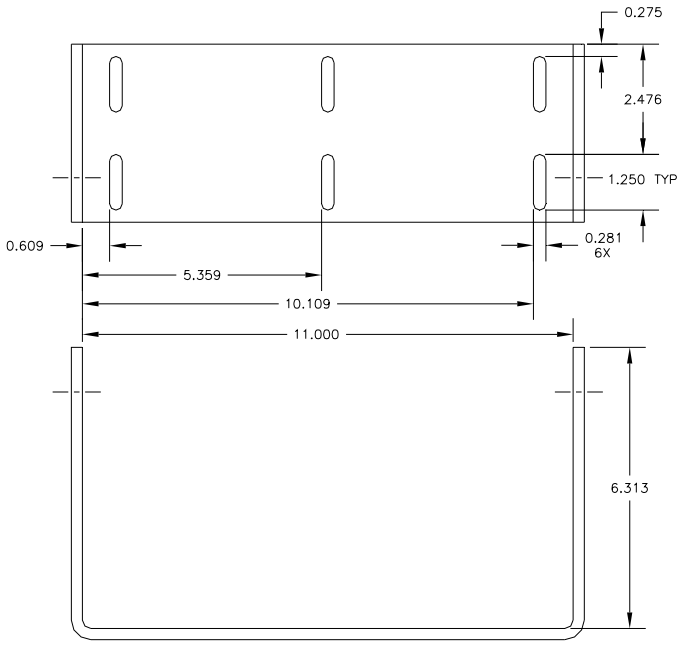
1.7 HAZARDOUS AREA PREPARATION AND INSTALLATION

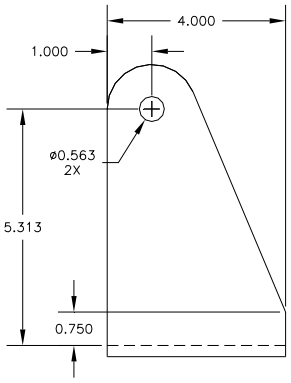
This equipment is to be installed only by suitably trained and qualified personnel to local national codes.

INSTALL PANEL INTO WIRELINE UNIT

Bolt the mounting bracket to the wireline unit.

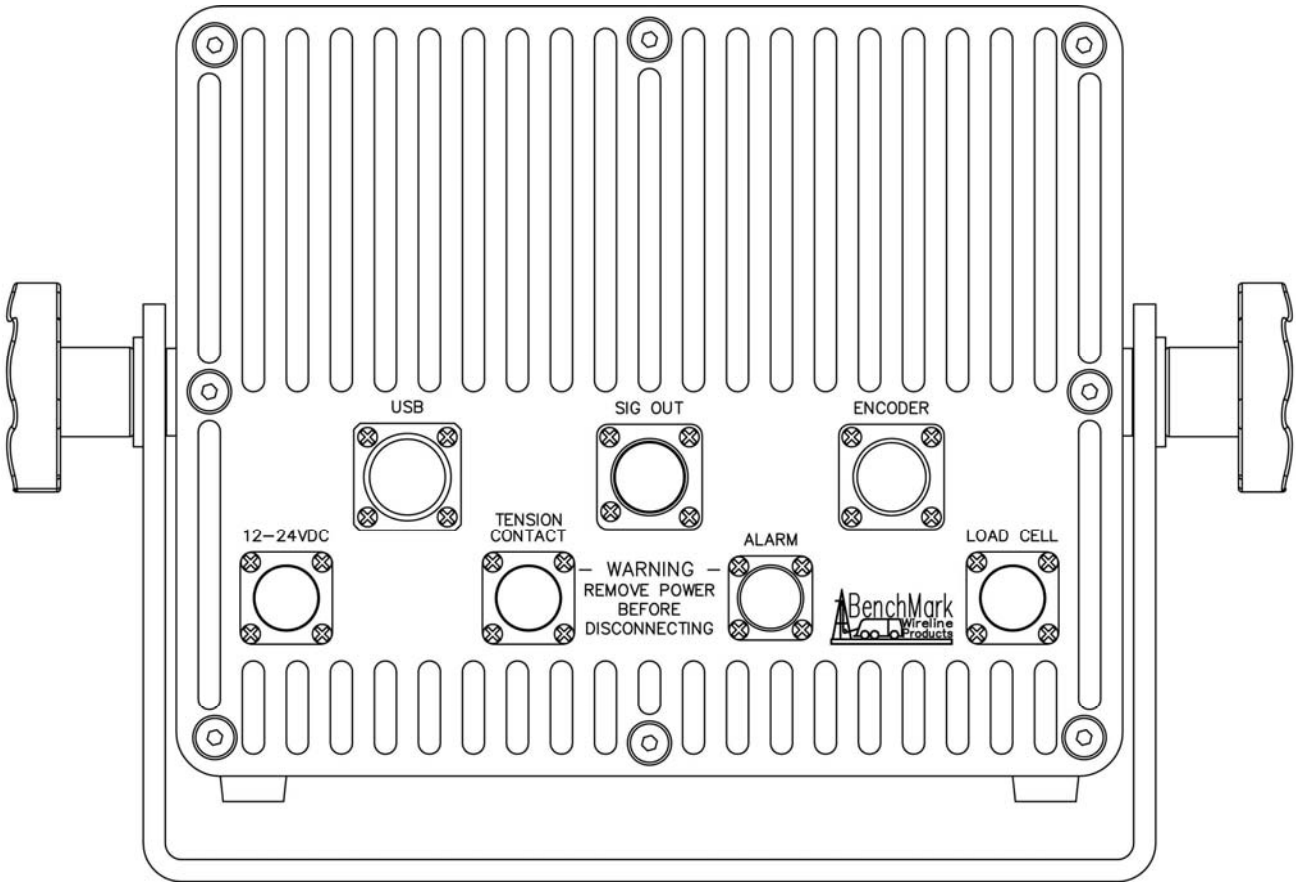
Install the panel into the mounting bracket





CONNECT INPUT POWER AND SIGNAL CABLES

Connect the cables from the measuring head to the LOAD CELL and ENCODER connectors on the box.



1.8 OBTAINING TECHNICAL ASSISTANCE

Call BenchMark Wireline Products Inc. at +1 281 346 4300
Or contact by email mail@benchmarkwireline.com
Or fax in request at +1 281 346 4301
Information is also available on website www.benchmarkwireline.com
Parts can be ordered by email, phone, or fax
Equipment can be returned for repair and maintenance. Please notify us by Phone, email, or fax before sending any equipment.
To return equipment to BenchMark, ship it to:
BenchMark Wireline Products
36220 FM 1093
Simonton, Texas 77476
U.S.A.

2.0 WELLSITE OPERATING SUMMARY

2.1 Power up panel and verify it is working properly.

2.2 Press Zero Depth and verify that panel tension reads 0. Verify tension is recorded on acquisition system.

2.3 Set line size to match cable size installed in head (refer to section 3).

2.4 Set Tension Alarm value (refer to section 3).

2.5 Set depth adjust value (refer to section 3).

2.6 Install cable in measuring head and lay it slack on the ground.

2.7 Press Zero Inc. Tension to zero the tension value.

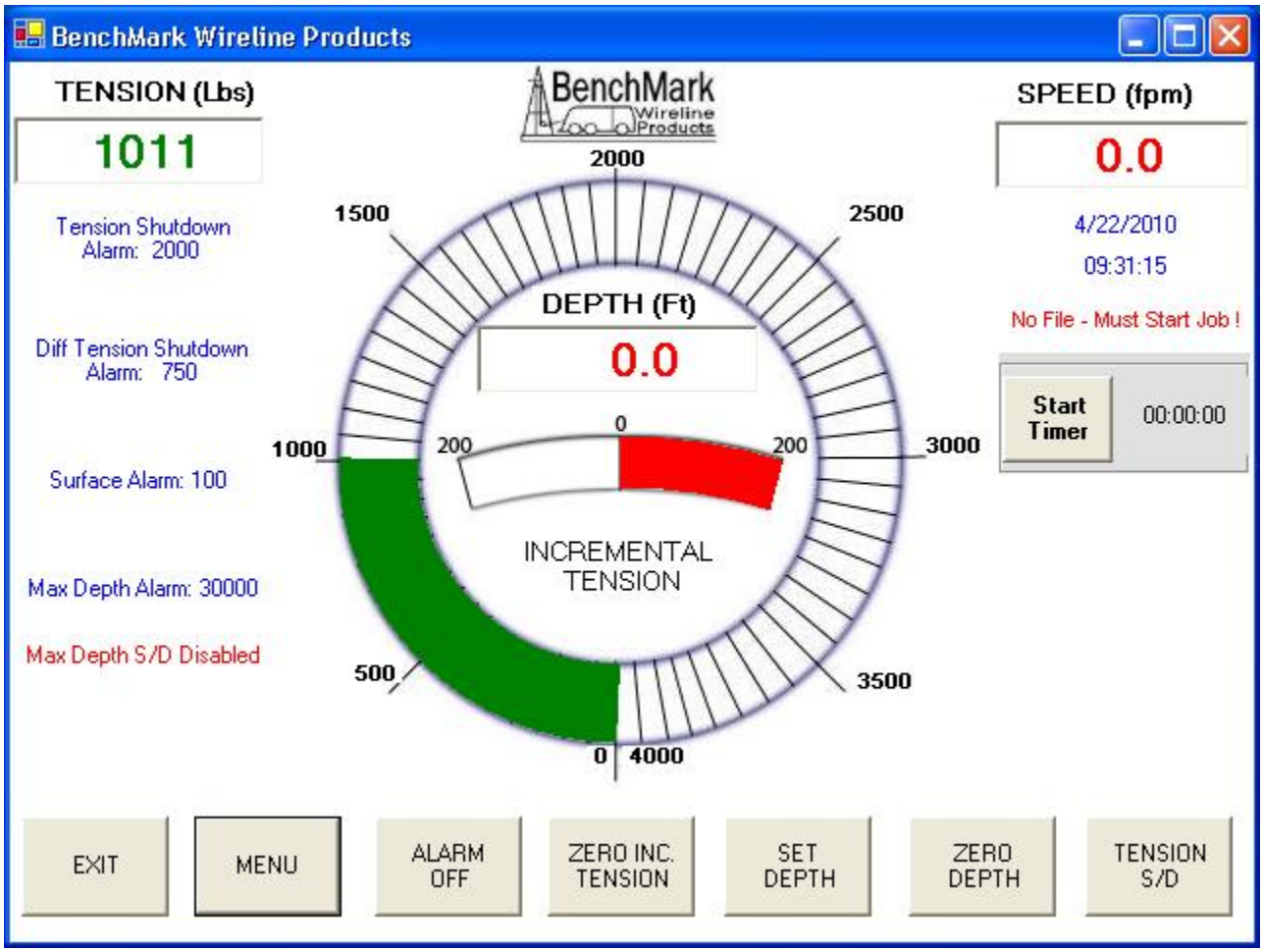
2.8 Press T-Cal and verify that panel tension reads 5000 lbs. Verify tension is being properly recorded on acquisition system.

2.9 Pull tool to depth 0 position. Press D-Zero and verify that panel depth reads 0. Set acquisition system depth to 0 at this time.

Make sure encoder direction is properly set.

3.0 SOFTWARE OPERATING INSTRUCTIONS

When the system first boots up, the main screen will appear.



Most of the commands are accessed through the buttons across the bottom of the screen.

EXIT BUTTON – Exits this program and returns to MS Windows

MENU BUTTON – Invokes a new screen with additional menu options (refer to section 3.1)

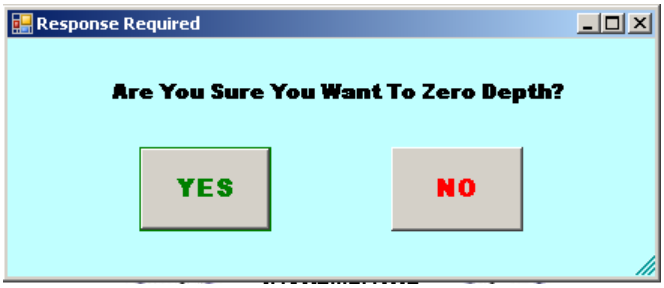
ALARM OFF BUTTON – Silences the audio alarm

ZERO INC. TENSION BUTTON - Resets Incremental Tension bar graph to zero

SET DEPTH - The Set Depth entry screen (refer to section 3.1.3) will appear

The range is -3047 to >30479 Mt or -9999.9 to 99999.8 FT

ZERO DEPTH – This button will invoke the following screen.



When the YES button is pressed, the depth value will be set to ZERO. If NO is pressed, the depth value will remain at the current value.

TENSION S/D

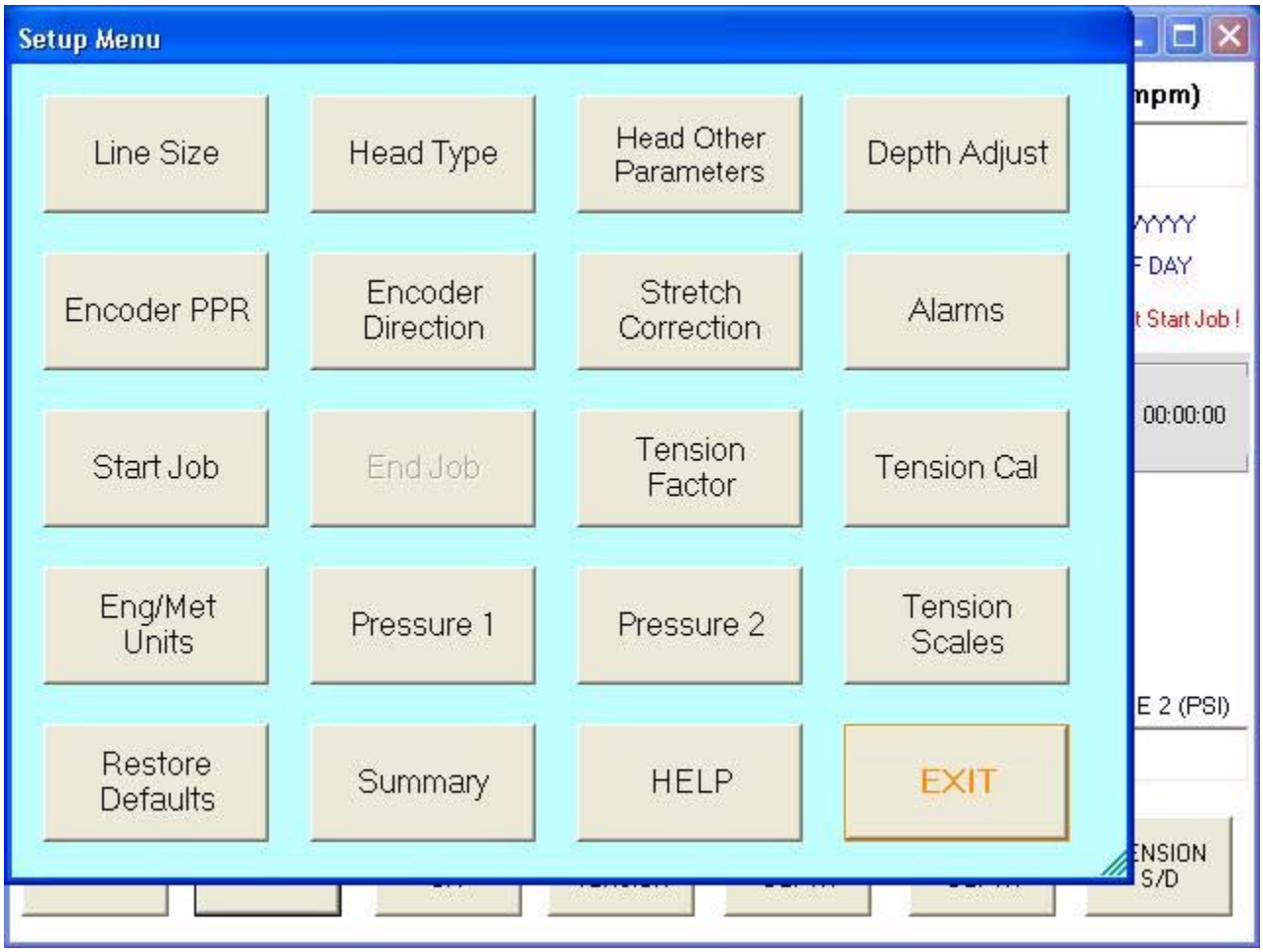
The Set Tension S/D entry screen will appear (refer to 3.1.7.1). The range is 0.1 to 19999

When this value is reached, alarm sounds, tension display flashes value, and tension contact closure switch is closed. This can be used to provide a signal to automatically stop the winch.

Each wireline size will have a corresponding Tension Alarm setting. Only the setting for the cable size selected can be adjusted.

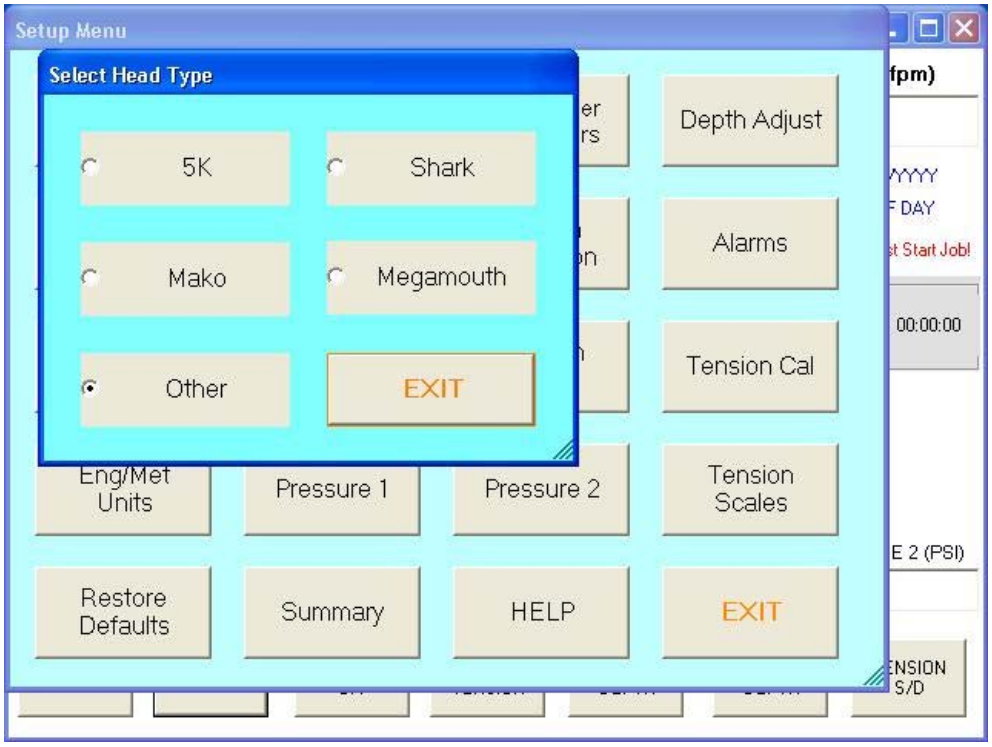
Default is 2000 lbs

3.1 MENU



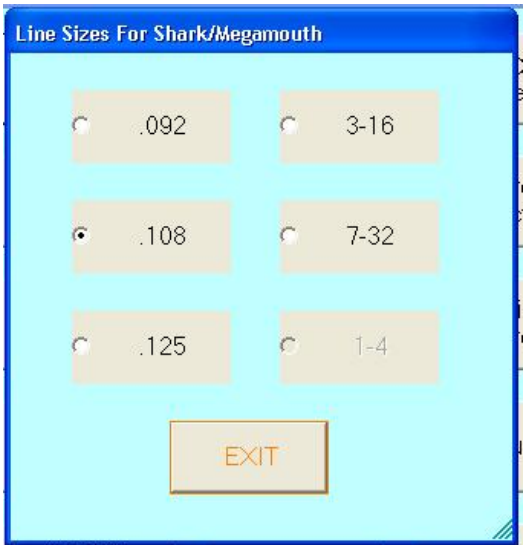
Following are the functional descriptions of each of the buttons

3.1.1 LINE SIZE
3.1.2 HEAD TYPE



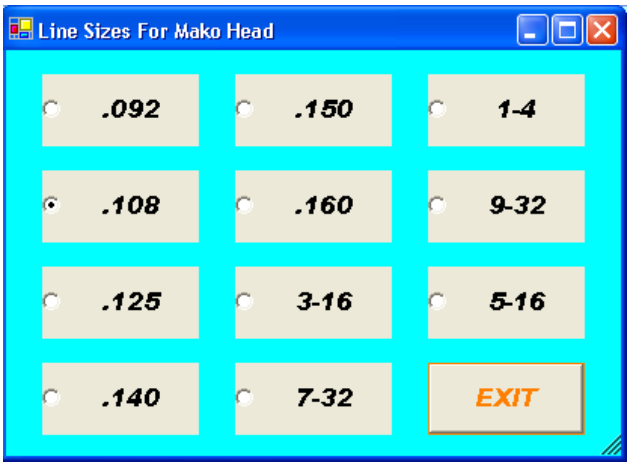
There are different options for each head type: Shark, 20” Mako, and 5K.

SHARK:



Select the line size by pressing the corresponding gray box. Default is .125

20” Mako:

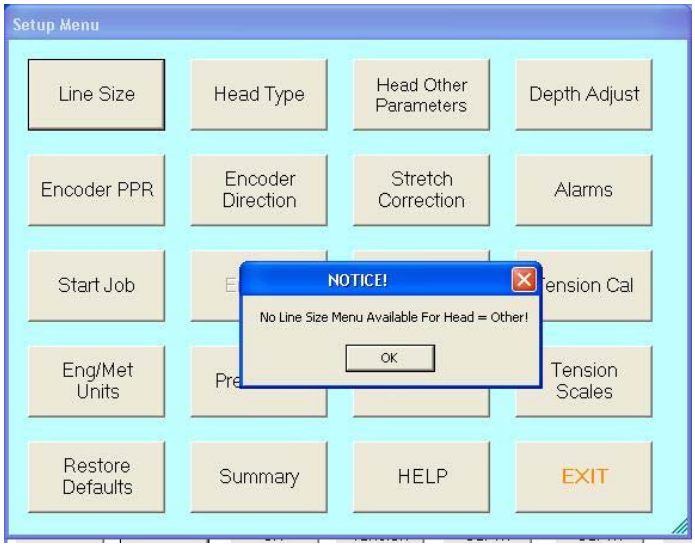


Select the line size by pressing the corresponding gray box. Default is .108

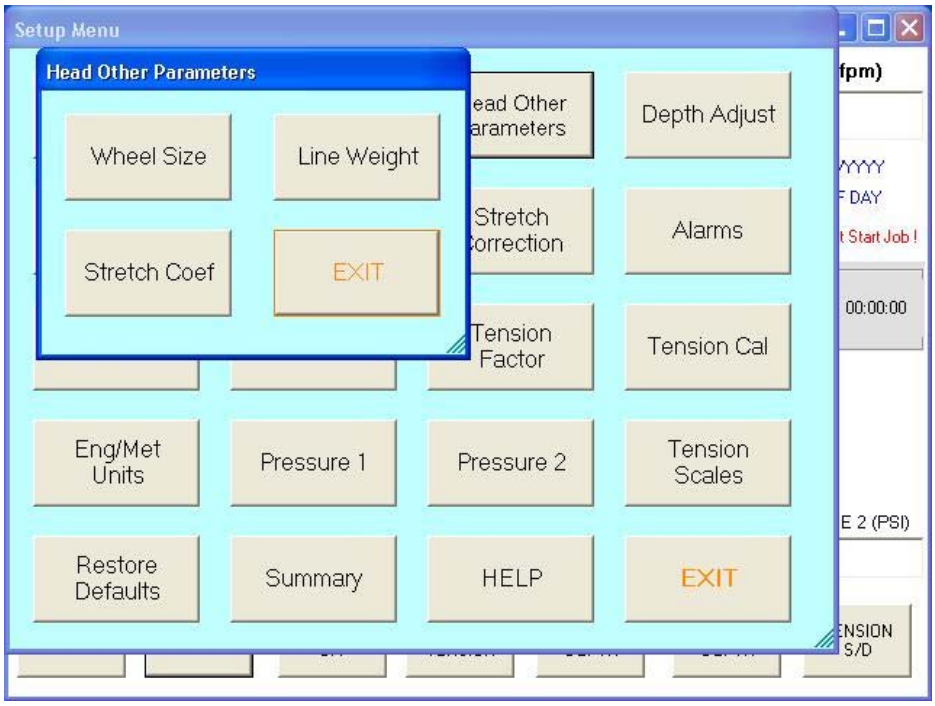
5K (Braided Line):

Select the line size by pressing the corresponding gray box. Default is 5/16

3.1.3 OTHER

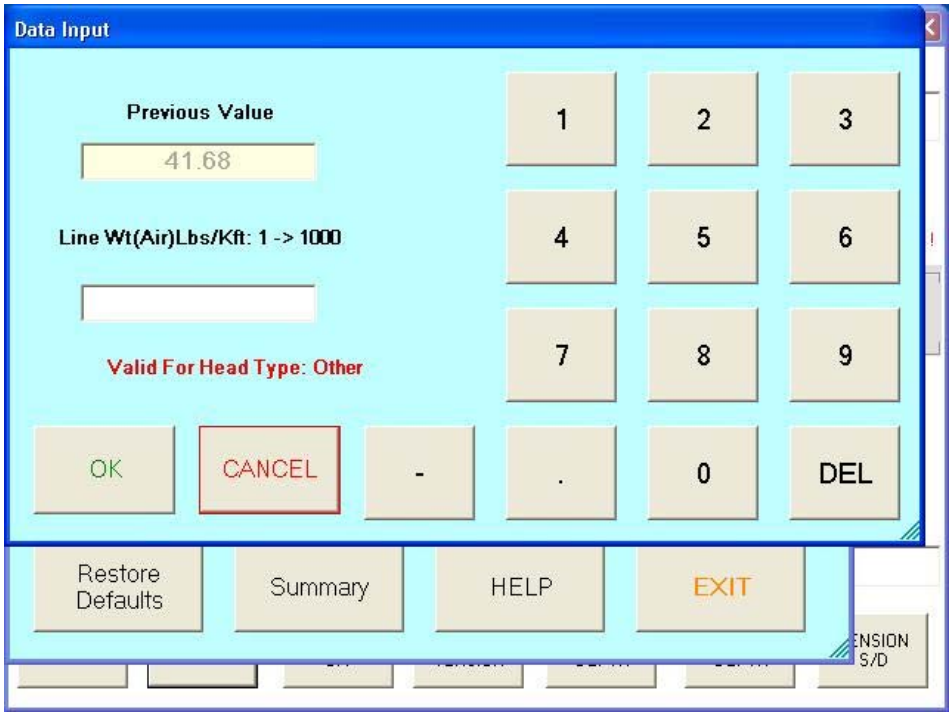


WHEEL SIZE (OTHER)

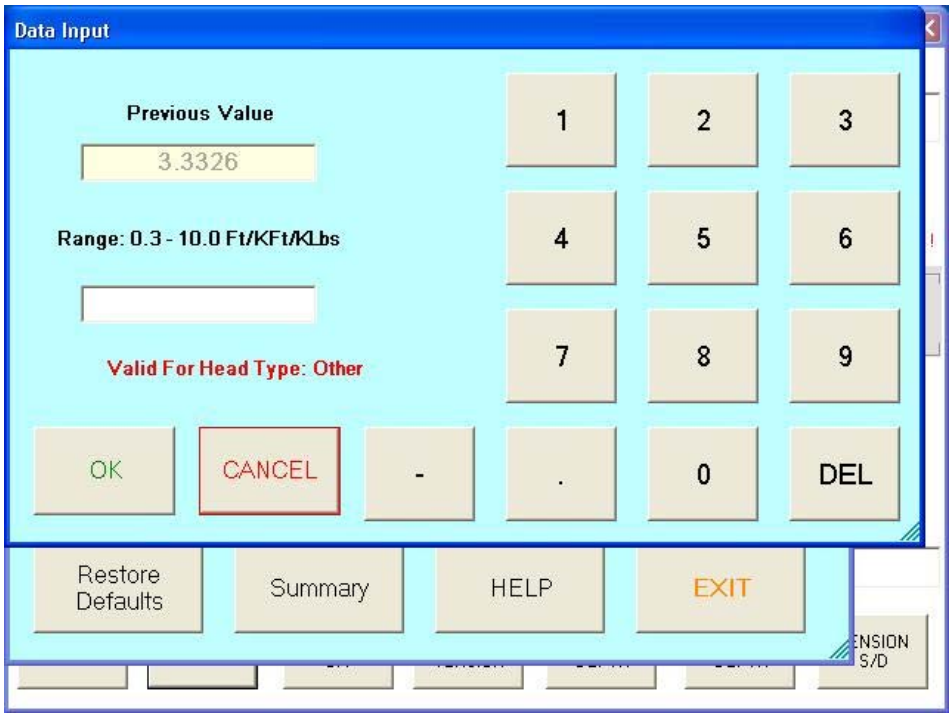


This setting allows you to change the size of the depth measuring wheel that is used to measure depth. To use a different measuring head from the Benchmark head, this setting will need to be changed to match the wheel size of the new head.

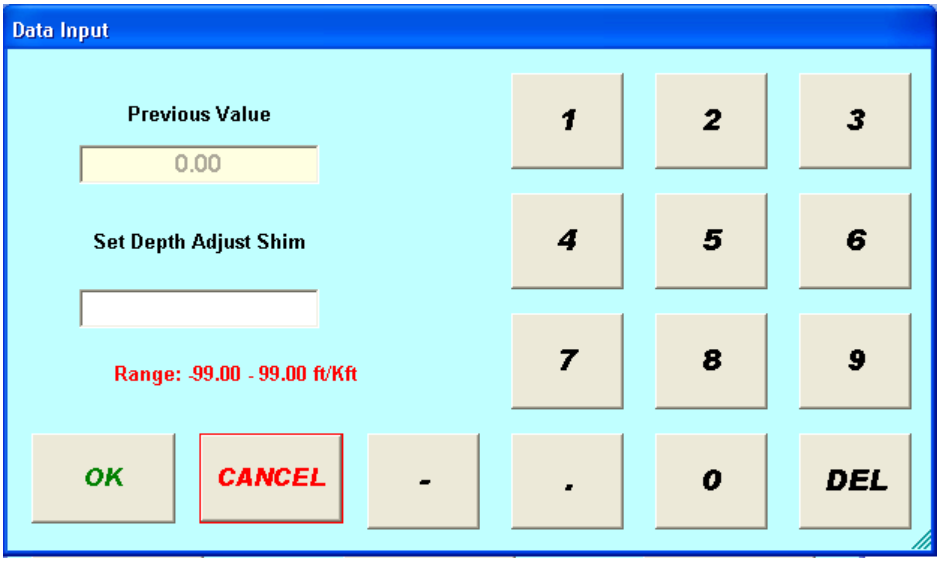
LINE WEIGHT (OTHER)



STRETCH COEFFICIENT (OTHER)



3.1.4 DEPTH ADJUST



The Set Depth Adjust Shim entry screen will appear.
The range is -99 to 99 ft/Kft

Shim

Adds or subtracts depth continually.
If 1 is entered then 1 foot or 1 meter will be added every 1000 feet or 1000 meters.

If -.2 is entered then .2 feet or .2 meters will be subtracted every 1000 feet or 1000 meters.

Default is 0.0

3.1.5 ENCODER PPR

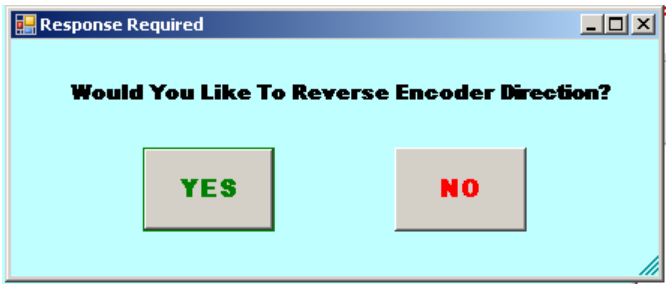
The range is 1-2000

The screen allows you to set the encoder pulses per revolution setting. This number should be printed on the encoder label.

Note: The pulses per foot/meter are not set by this screen, only the encoder input. Pulses per foot/meter are calculated from encoder PPR and Wheel Size.

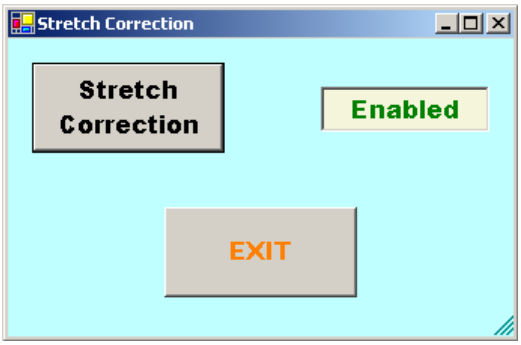
Default is 1200 PPR

3.1.6 ENCODER DIRECTION



This screen allows you to change the direction of the encoder. If the depth is changing in the opposite direction to which the line is moving, this option can be used to correct it. On a dual wheel measuring device with two encoders, the encoder on one of the wheels will turn in the opposite direction from the other. If you change encoders, this feature can be used to change the encoder direction.

3.1.7 STRETCH CORRECTION



Enabling this allows stretch correction to automatically be applied to the depth. The correction is calculated using line size and mud cable coef. parameters

Stretch is calculated by stretch due to cable weight + stretch due to weight at end of cable

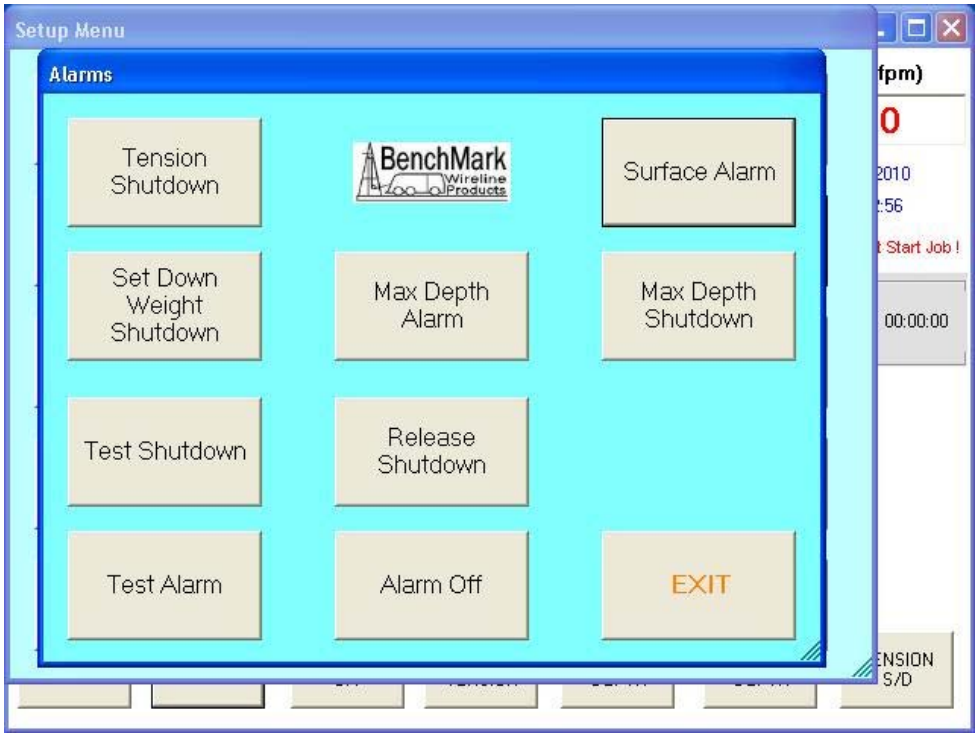
stretch due to cable weight =
stretch coefficient * depth * cable weight / 2

stretch due to weight at end of cable =
stretch coefficient * depth * (tension – cable weight)

When tension is less than cable weight, tension measured is due to cable weight alone.

Default is: enabled.

3.1.8 ALARMS



Tension Shutdown: refer to 3.1.7.1

Max Depth Alarm: refer to 3.1.7.2

Surface Alarm: refer to 3.1.7.3

Set Down Weight Shutdown: refer to 3.1.7.4

Max Depth Shutdown: refer to 3.1.7.5

Test Shutdown: refer to 3.1.7.6

Release Shutdown: refer to 3.1.7.7

Test Alarm: refer to 3.1.7.8

Alarm Off: refer to 3.1.7.9
Note: All shutdowns refer to the relay contact closure. It is the operator's responsibility to connect the relay contacts to the actual reel shutdown mechanism.

3.1.8.1 TENSION SHUTDOWN

The Set Tension S/D entry screen will appear. The range is 0.1 to 19999

When this value is reached, alarm sounds, tension display flashes value, and tension contact closure switch is closed. This can be used to provide a signal to automatically stop the winch.

Each wireline size will have a corresponding Tension Alarm setting. Only the setting for the cable size selected can be adjusted.
Default is 2000 lbs

3.1.8.2 MAX DEPTH ALARM

The Set Max Depth Alarm entry screen (refer to section 3.1.3) will appear. The range is from the surface alarm setting to 30,000 feet.

Allows you to enter in the maximum depth desired. If the tool goes below that depth then an alarm will sound. If max depth shutdown is enabled, then the relay will close (refer to section 3.1.7.5).
Default: 30,000 ft.

3.1.8.3 SURFACE ALARM

The Set Surface Alarm entry screen (refer to section 3.1.3) will appear. The range is 0-304 Mt or 0 to 999 ft.

When this depth value is reached, the alarm will sound warning the operator that you are approaching the surface.
Default value is 100 feet.

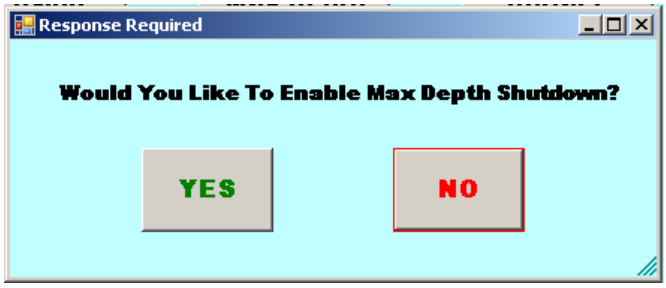
3.1.8.4 SET DOWN WEIGHT SHUTDOWN

The Set Down Weight S/D entry screen will appear (refer to section 3.1.3). The range is 0.1 to 5000

This function is similar to a differential tension shutdown except that it only activates when the value is exceeded. This will occur when tension decreases rapidly in a negative direction.

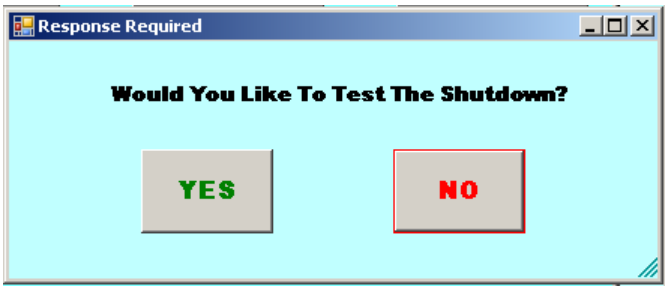
When this event occurs the shutdown relay will close.
Default: 750

3.1.8.5 MAX DEPTH SHUTDOWN



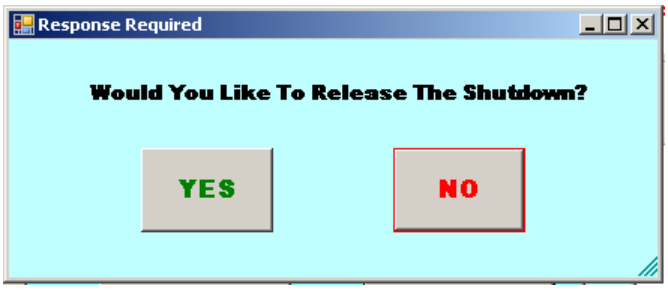
If enabled, the relay will close and the winch will stop when the maximum depth value is reached. The maximum depth value is set on the max depth alarm screen (refer to section 3.1.7.2).
Default: disabled

3.1.8.6 TEST SHUTDOWN



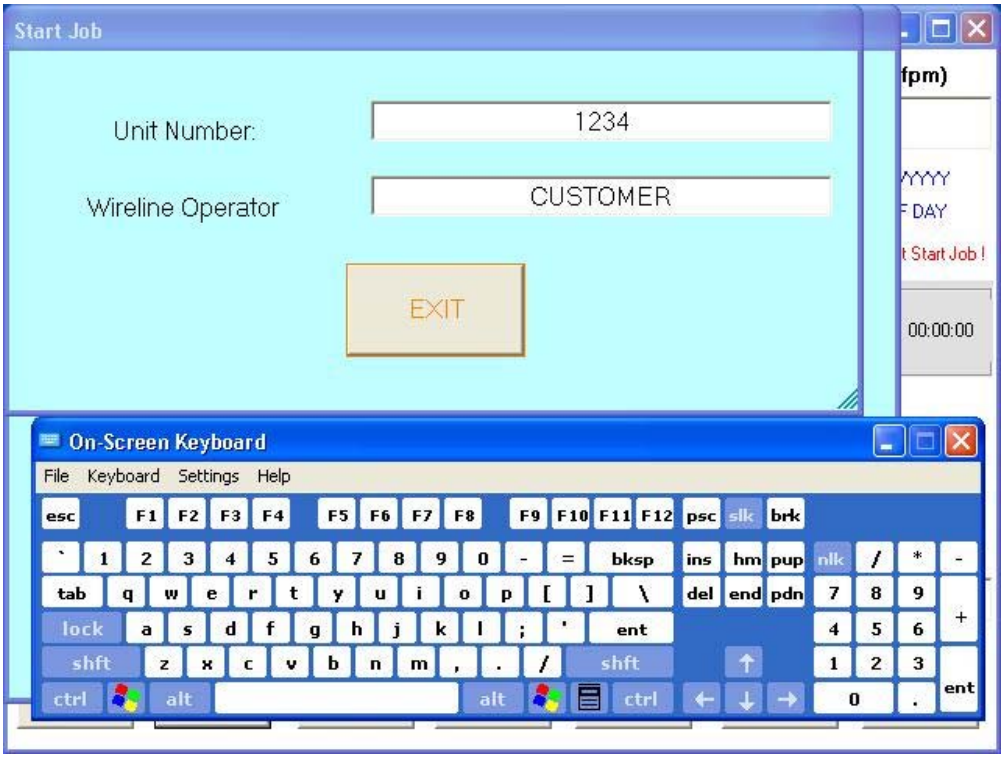
When this button is pressed, the contact closure pins are shorted. This can be used to test the winch shutdown mechanism or any other mechanism that uses these contacts.

3.1.8.7 RELEASE SHUTDOWN



When this button is pressed, the contact closure pins (A and B) on J8 are open.

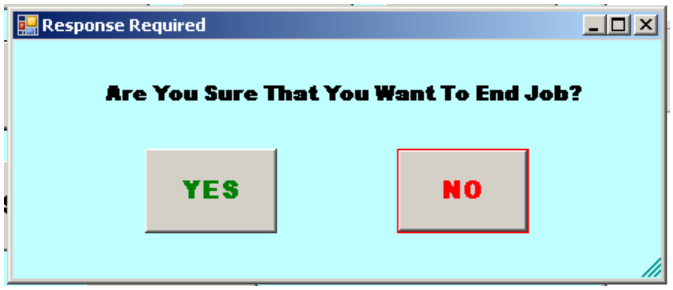
3.1.9 START JOB



An on-screen keyboard is provided automatically for data entry.

Upon closing of the dialog screen a LAS file is created using the time stamp as the name of the file. This file name is displayed on the screen. If job is not started the screen will show no file – must start job!
Note: No LAS file is created until the operator chooses 'start job.'

3.1.10 END JOB



If the response is 'yes' then the LAS file is cleared. The button 'start job' is enabled once again.

3.1.11 TENSION FACTOR

The Set Load Cell Angle entry screen (refer to section 3.1.3) will appear The range is 0.5-2.0 degrees. Default is 1.0.

Load cell angle is used to compensate when a load cell is not hung vertically (i.e. bottom sheave). Enter the value derived from the formula:

$$\text{Factor} = \frac{1}{\text{Cosine}(\text{angle})}$$

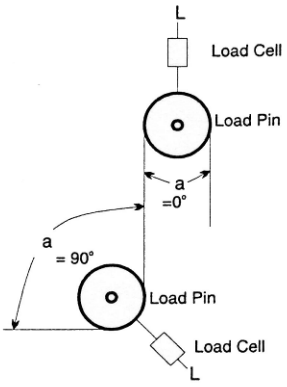
Examples:

30 degrees = 1.035

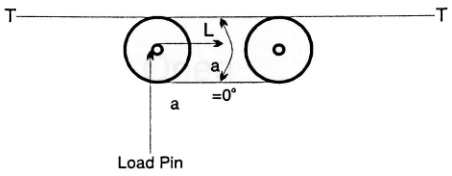
45 degrees = 1.082

90 degrees = 1.414

120 degrees = 2.0

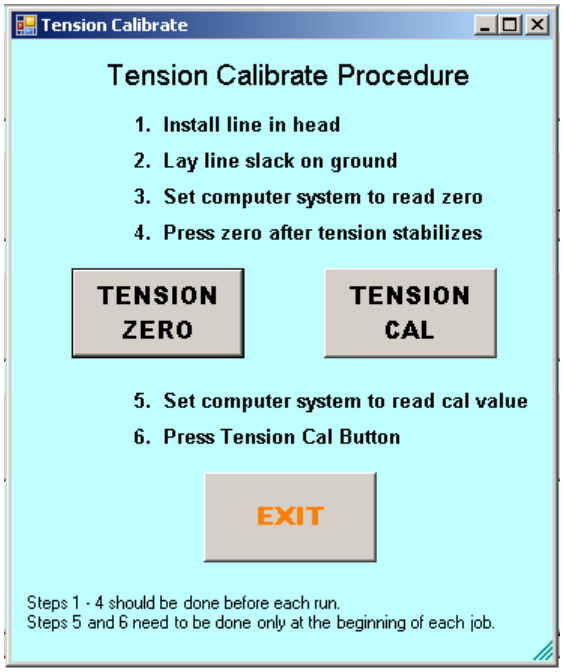


Example 1: Load Cell/Load Pin located at Wireline Lower and Upper Sheave



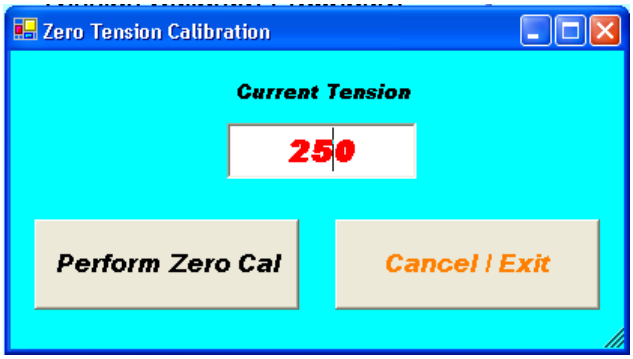
Example 2: Combination two wheel counter at wireline unit

3.1.12 TENSION CAL


Tension Calibrate
Tension Calibrate Procedure
1. Install line in head
2. Lay line slack on ground
3. Set computer system to read zero
4. Press zero after tension stabilizes
TENSION ZERO
TENSION CAL
5. Set computer system to read cal value
6. Press Tension Cal Button
EXIT
Steps 1 - 4 should be done before each run.
Steps 5 and 6 need to be done only at the beginning of each job.

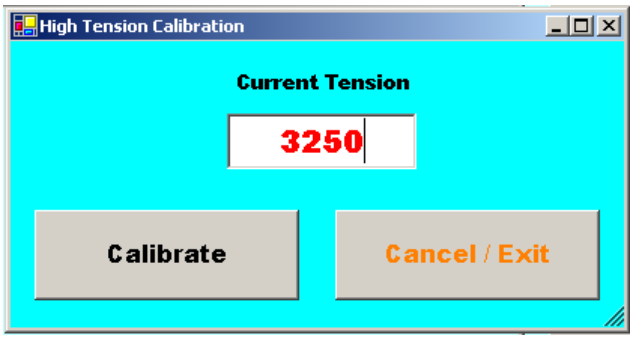
3.1.12.1 TENSION ZERO

Pressing Tension Zero will null out any tension offset voltage up to 200 lbs (slickline head) or 1000 AM5K braided line head.



3.1.12.2 TENSION CAL

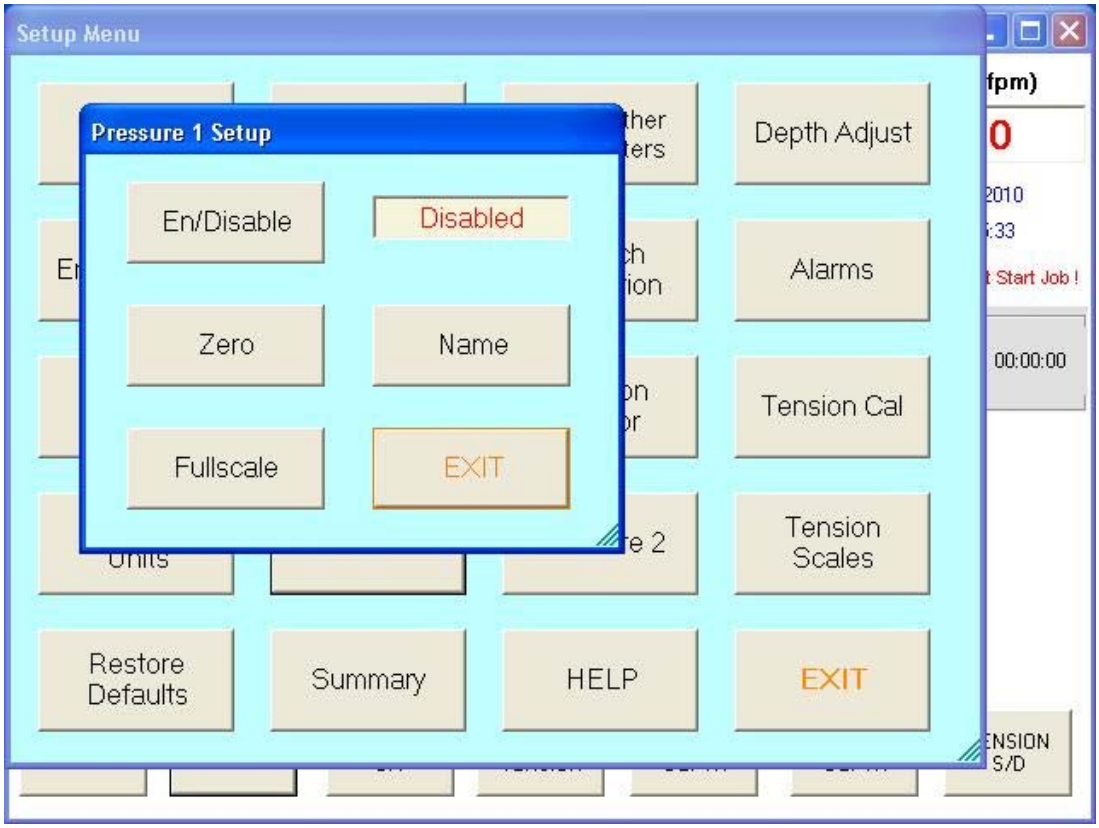
Pressing Tension Cal will activate the tension relay inside the panel. The load pin should then return a calibrated signal of 5000 lbs.



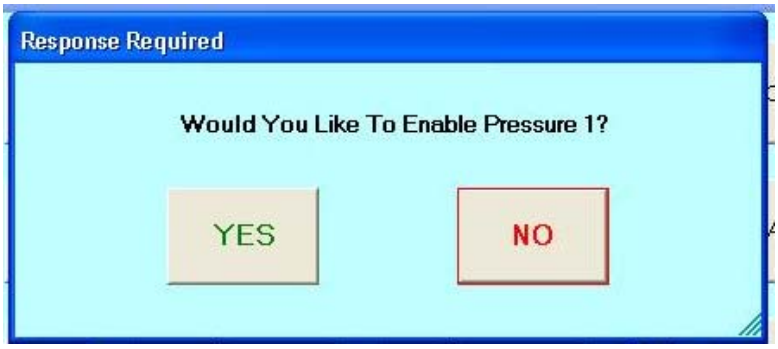
3.1.13 ENG/MET UNITS

This menu allows you to select the display units for either depth or tension. Default is feet and lbs.

3.1.14 PRESSURE 1



3.1.14.1 ENABLE / DISABLE PRESSURE 1

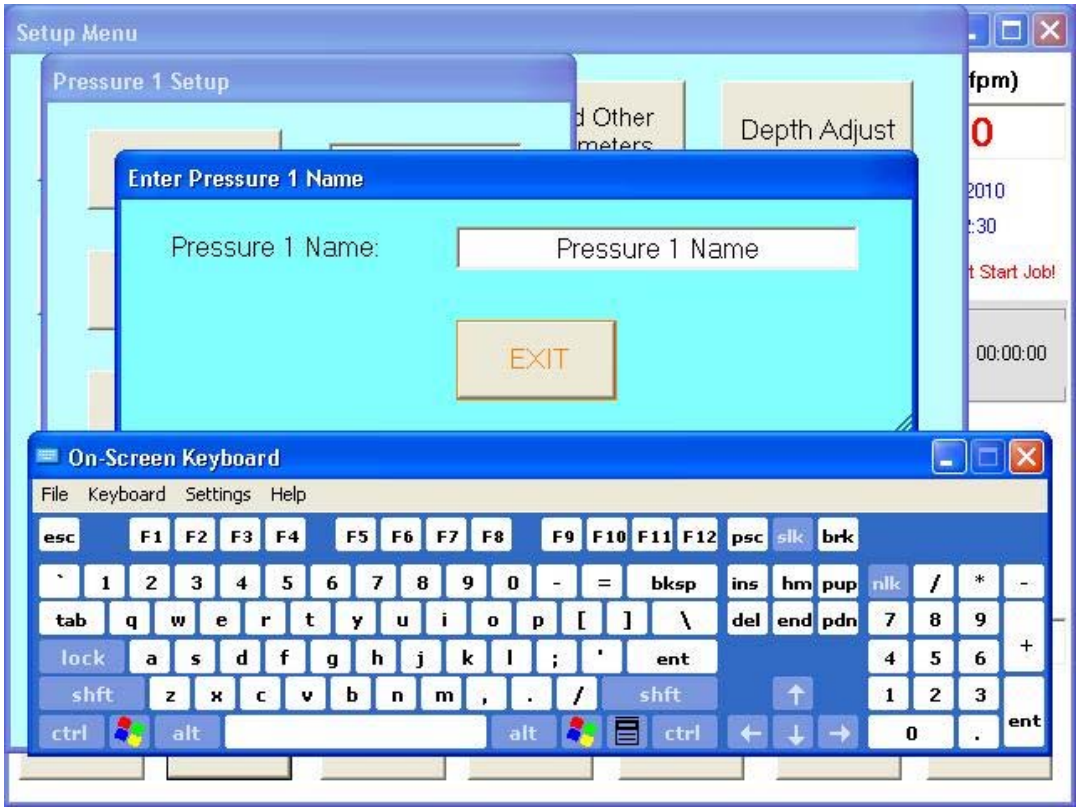


When Pressure 1 and/or Pressure 2 are enabled, the main screen will display these values. Once disabled these values will be removed from the main screen

3.1.14.2 ZERO

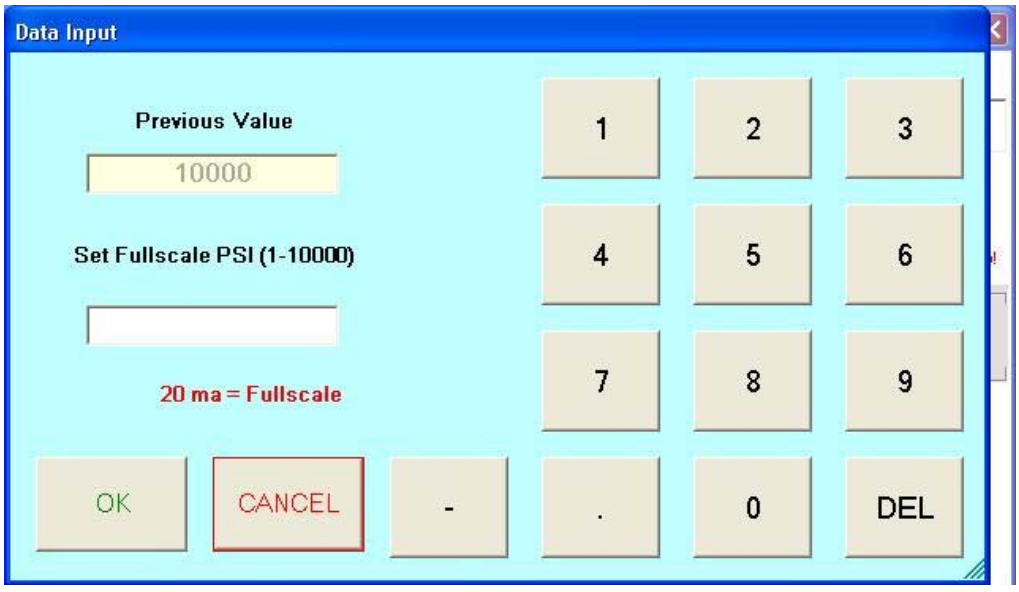
This menu allows the user to zero out the information in Pressure 1 (refer to 3.1.12 for a screenshot of this menu.)

3.1.14.3 NAME



This screen provides a way to enter a descriptive name for the pressure data (i.e. tubing pressure Well 12345)

3.1.14.4 FULLSCALE

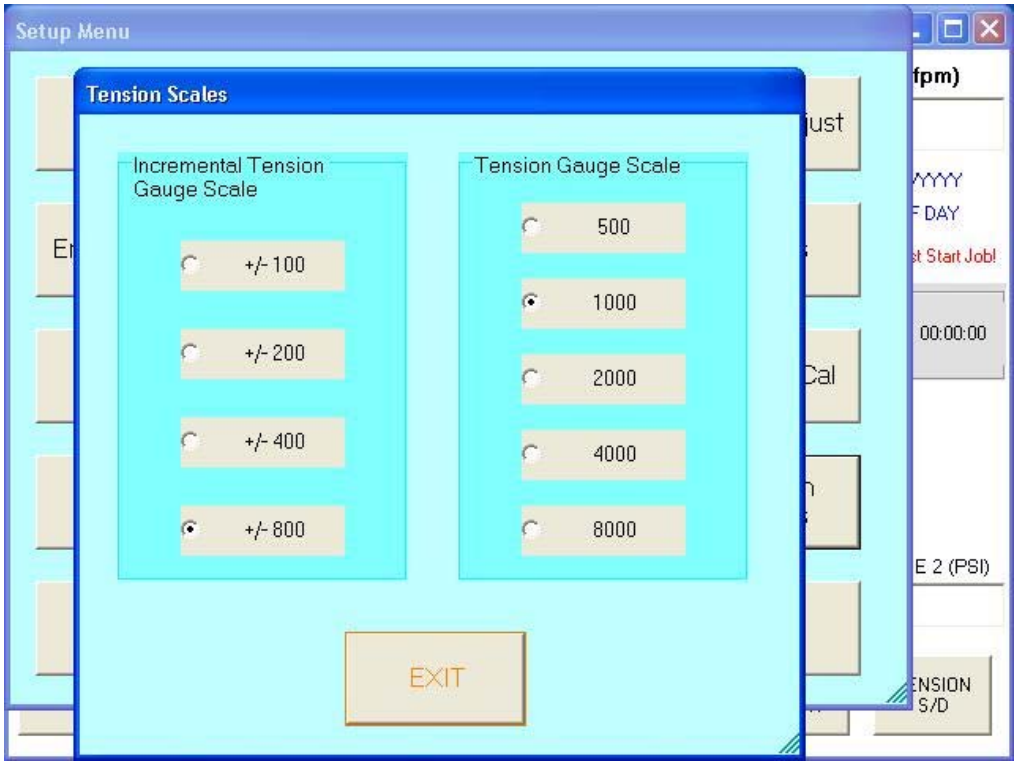


The menu adjusts the settings for Fullscale PSI. The range is 1-10000, and the default setting is 10000

3.1.15 PRESSURE 2

The settings menus for Pressure 2 are identical to Pressure 1. (See sections 3.1.14.1, through 3.1.14.4 for more information.)

3.1.16 TENSION SCALE

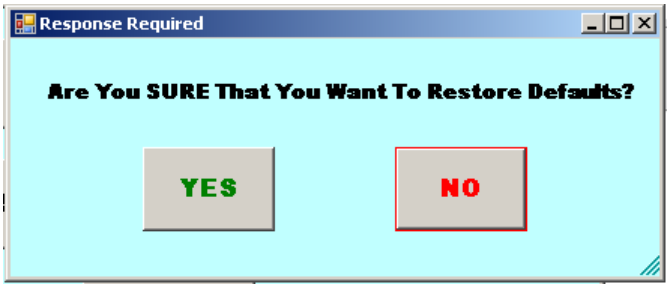


The Tension Scale Screen allows the changing of both Bar Meter Scale near the top and the Needle Gauge Scale at the center of the screen. It also allows the Gauge Scale to be used either in a Differential or Incremental scale.

Incremental tension provides a high resolution tension scale. It must be periodically reset as tension increases or decreases to keep it from “pegging out”.

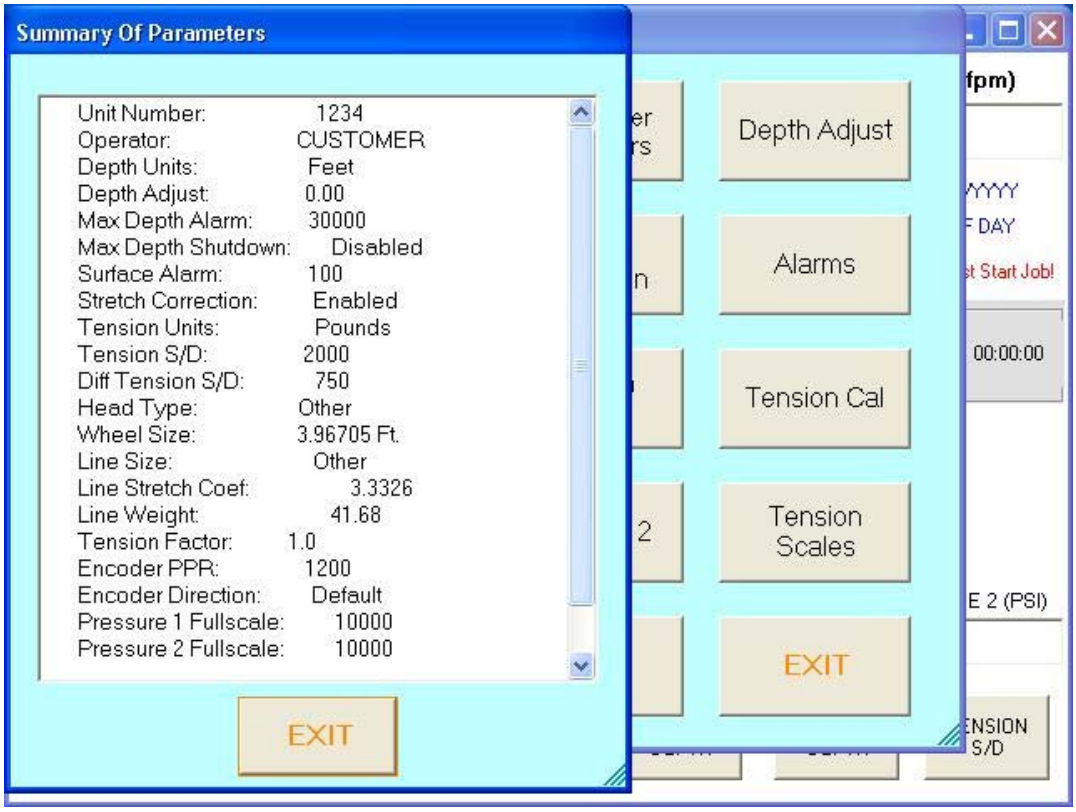
Differential tension provides a delta tension reading. The meter will slowly reset itself to 0 so the reset switch is not necessary.

3.1.17 RESTORE DEFAULTS



When this button is pressed, all the settings will be restored to their default values. This functions as a software reset. Depth will be zeroed.

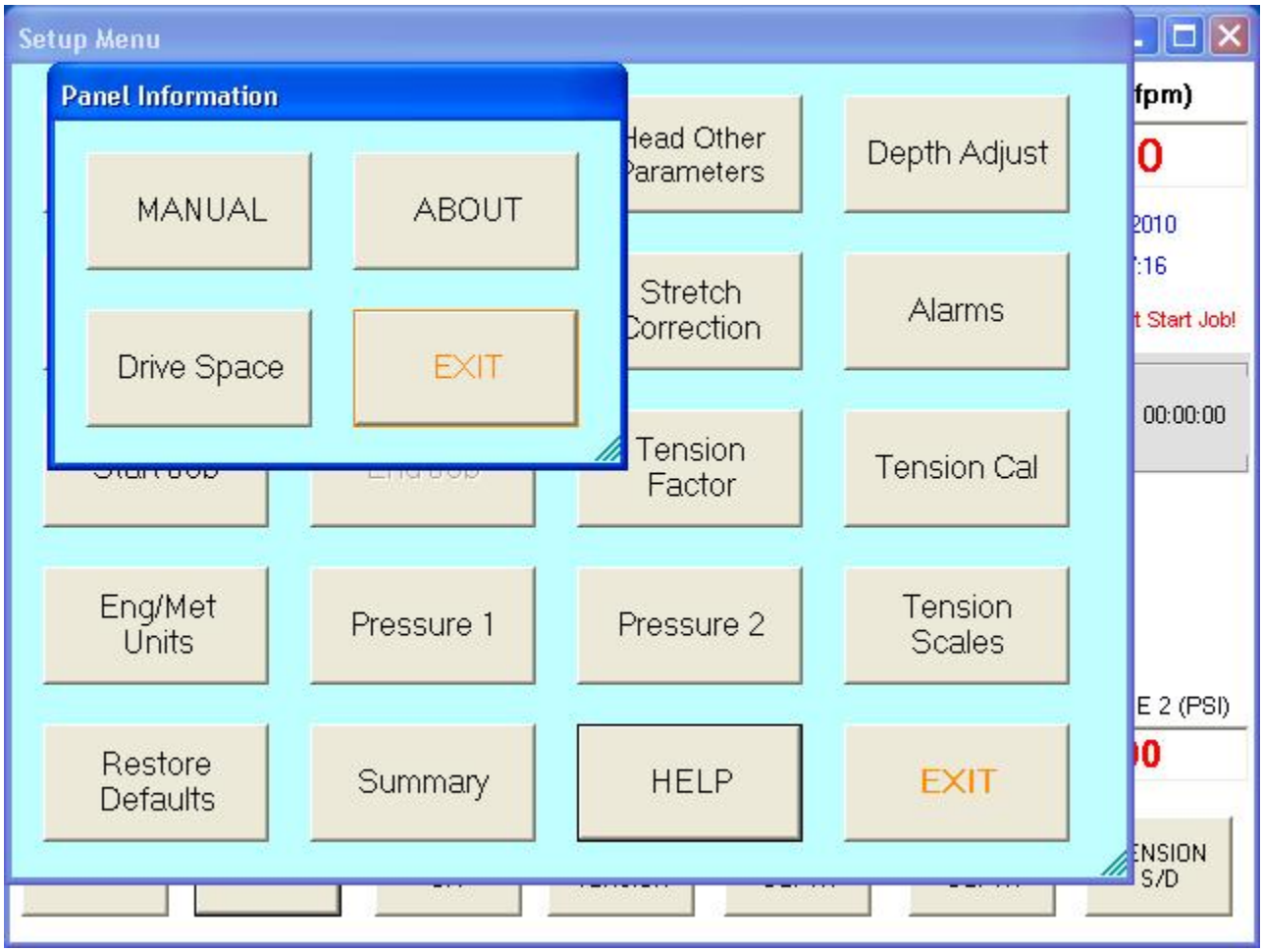
3.1.18 SUMMARY



The Summary Menu is a quick reference to what parameters are set. This is a static display.

All of the defaults are shown.

3.1.19 HELP MENU



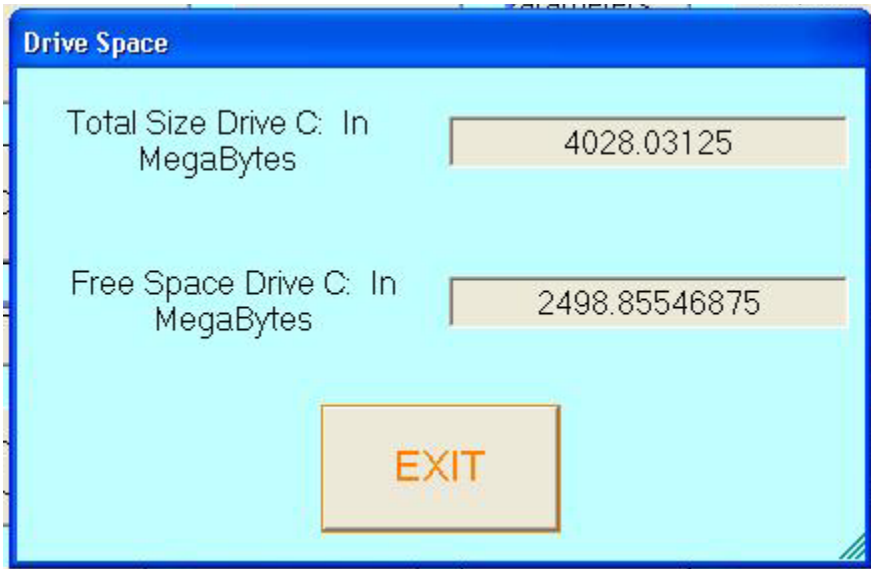
The HELP button will display the four options displayed above.

3.1.19.1 ABOUT SCREEN

The ABOUT button displays the software revisions.

There are two programs that can be updated, the HOISTMAN program which is run by the PC and the ACQUISITION program that is run by the real time board.

3.1.19.2 DRIVE SPACE



4.0 SOFTWARE UPDATE PROCEDURE

4.1 HOISTMAN PROGRAM UPDATE (PC BASED PROGRAM)

4.1.1 Close all running programs in Windows XP Embedded.

4.1.2 Copy Hoistman Display.EXE to the directory C:\ Program Files\Kerr\

4.1.3 Shutdown Windows XP Embedded, and cycle power. When the Hoistman Display program comes up check the HELP – ABOUT menu and confirm that both software versions are at the latest revision.

4.1.4 Copy this file (manual.pdf) to C:\. This manual can then be evoked from the help menu.

4.2 REAL TIME BOARD PROGRAM UPDATE (AMS40 BOARD)

The following Instructions for programming the DS89C450 MicroController's internal Flash memory with the real-time data acquisition program.

NOTE: the rear panel screws need to be removed to gain access to the switches on the CPU piggy-back PCB.

4.2.1 Close all running programs in Windows XP Embedded.

4.2.2 Copy the file S990000?.HEX to the root directory C:\

Transfer these files to the CompactFlash (C:\) root directory
via Ethernet or USB connection using the Windows Explorer

4.2.3 Open a Hyperterminal session. Use the following settings:
Serial Port: COM1
Baud Rate: 57600
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

4.2.4 Set the switches on the piggy-back PCB to PROGRAM mode as follows:
SW1 - position away from CPU
SW2 - position away from CPU
SW3 - position towards CPU

4.2.5 Press the keyboard ENTER key. The MicroController ROM Loader will respond with a banner and then a '>' prompt.

4.2.6 Type an uppercase 'K' for Klean and Erase. When complete the prompt should appear. If the prompt does not appear, cycle the switches and repeat steps 4.2.4 and 4.2.5

4.2.7 Type an uppercase 'L' and the ROM Loader will wait to Load a HEX file.

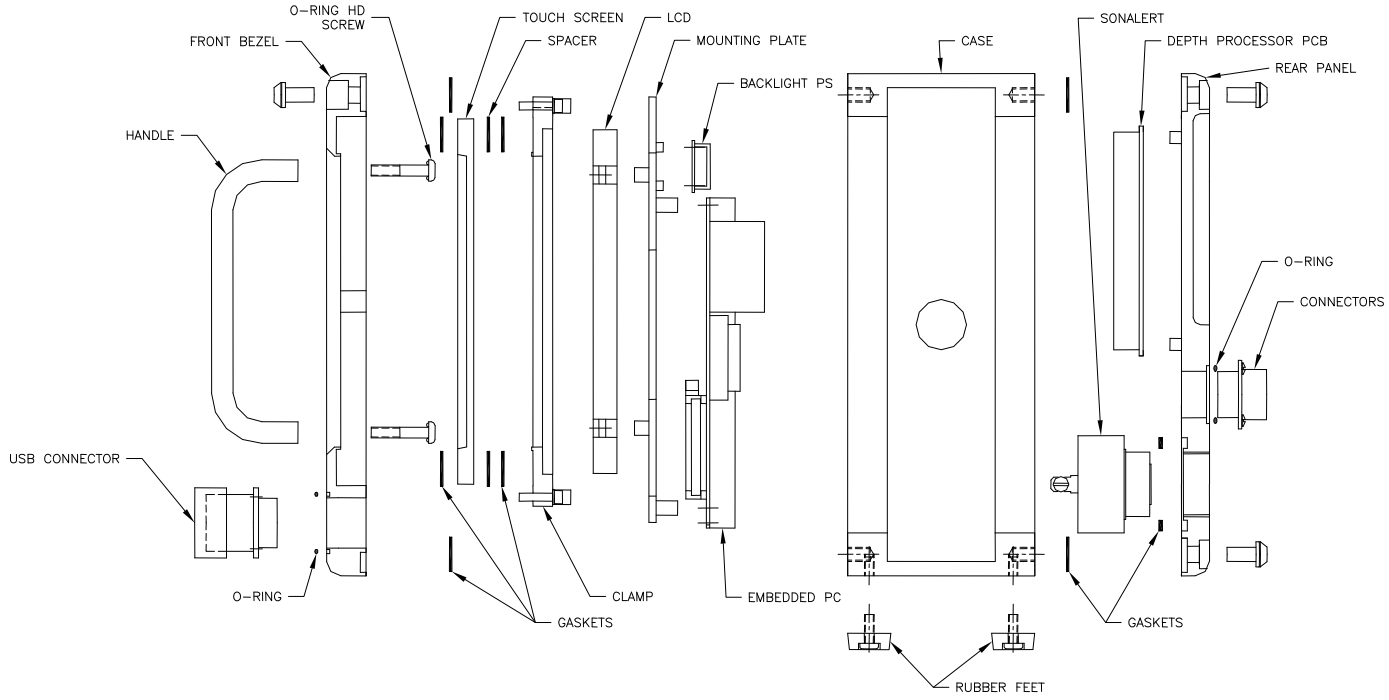
4.2.8 Pull down the FILE menu and choose: OPEN. The file browser will open and then go to the C:\ root directory and choose the new revision HEX file to transfer. Next choose DOWNLOAD in the same FILE menu.

4.2.9 The ROM Loader will begin programming the Flash and will report a GOOD status for the duration of the programming procedure (about 5 minutes) as follows:

GGGG

5.0 MAINTENANCE & ASSEMBLY DRAWINGS AND PARTS LIST

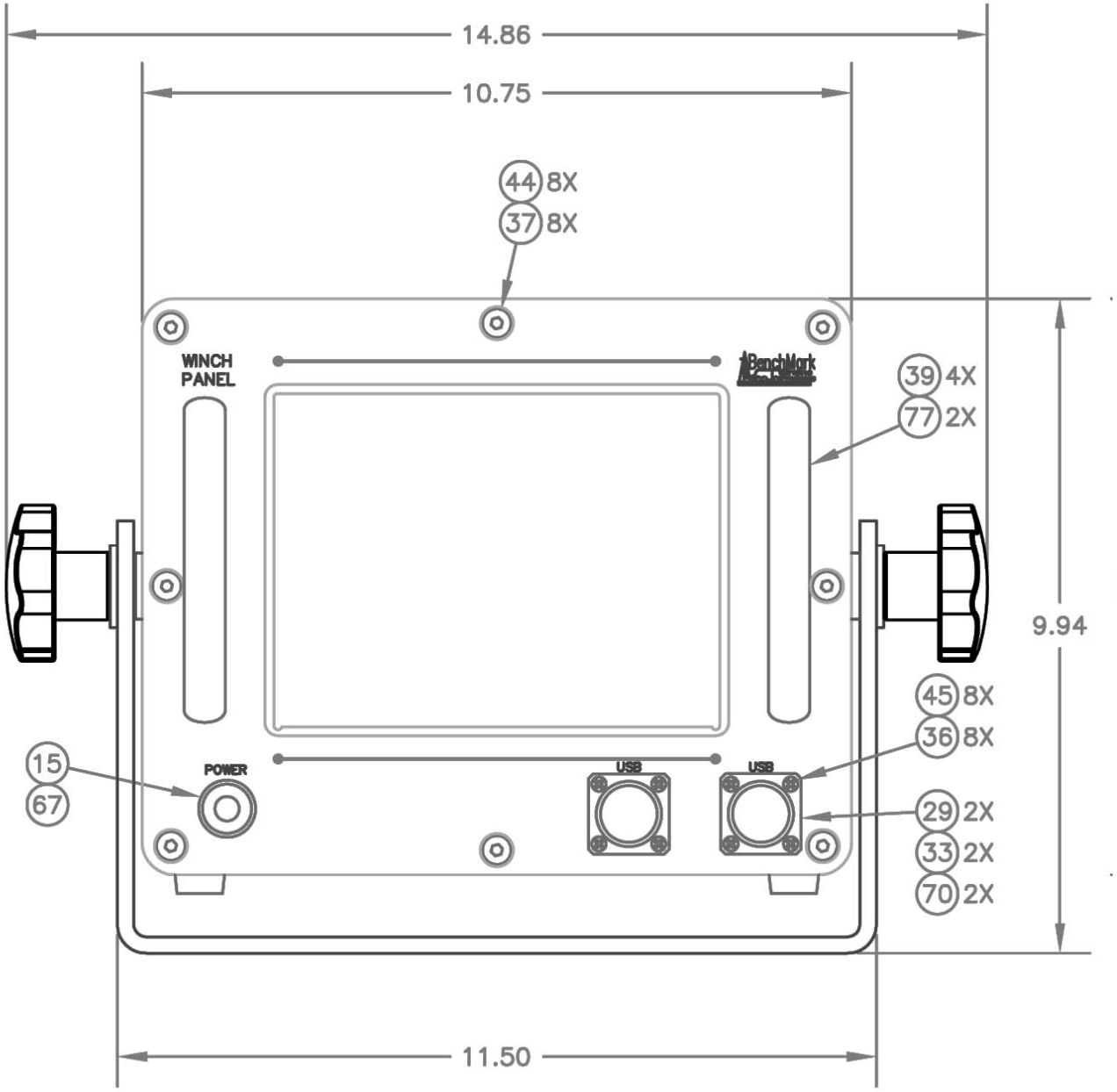
5.1 ASSEMBLY / DISASSEMBLY DRAWING



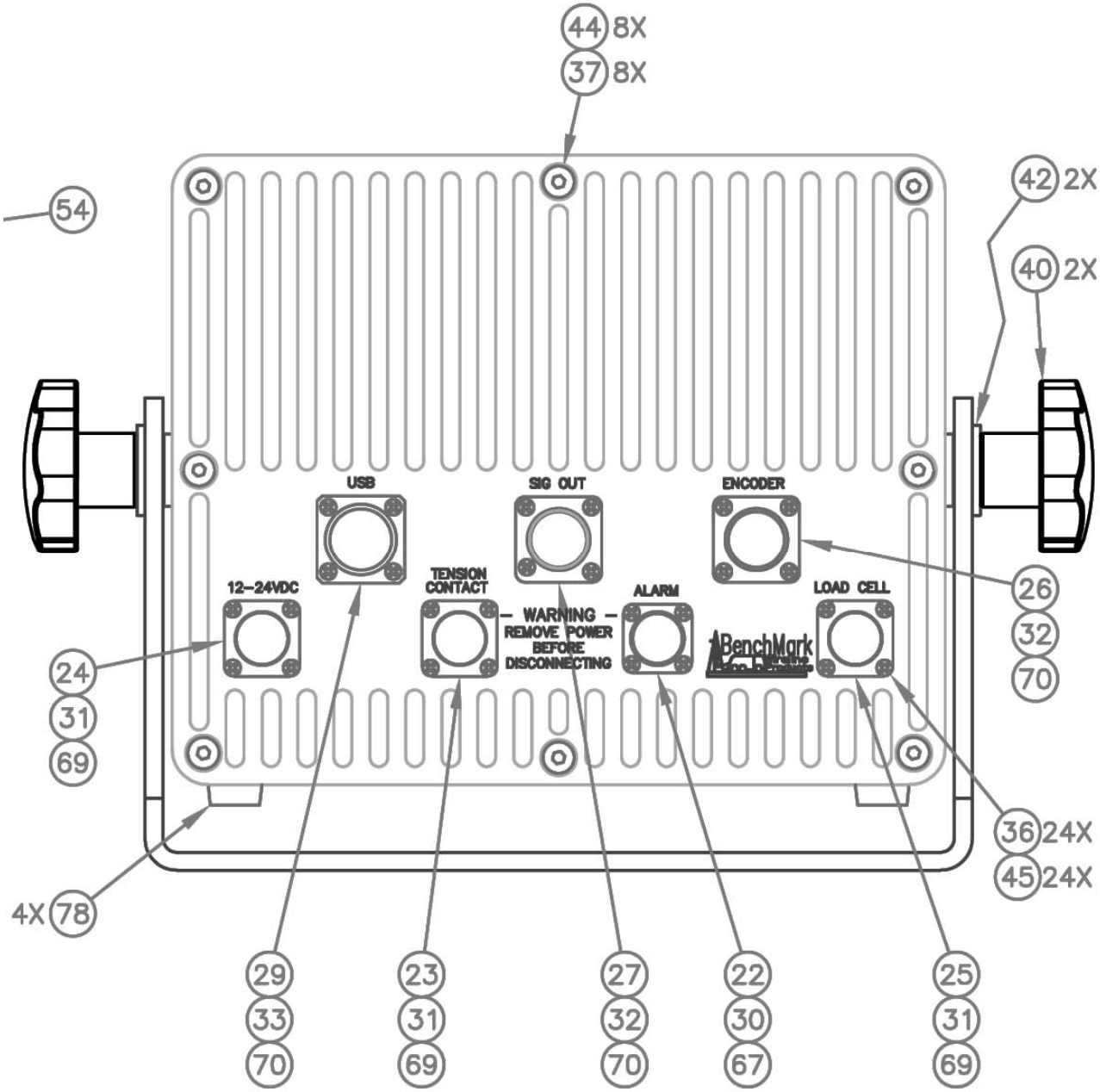
TORQUE SPEC'S:

1/4-20 = 75.2 IN-LB
10-32 = 31.7 IN-LB

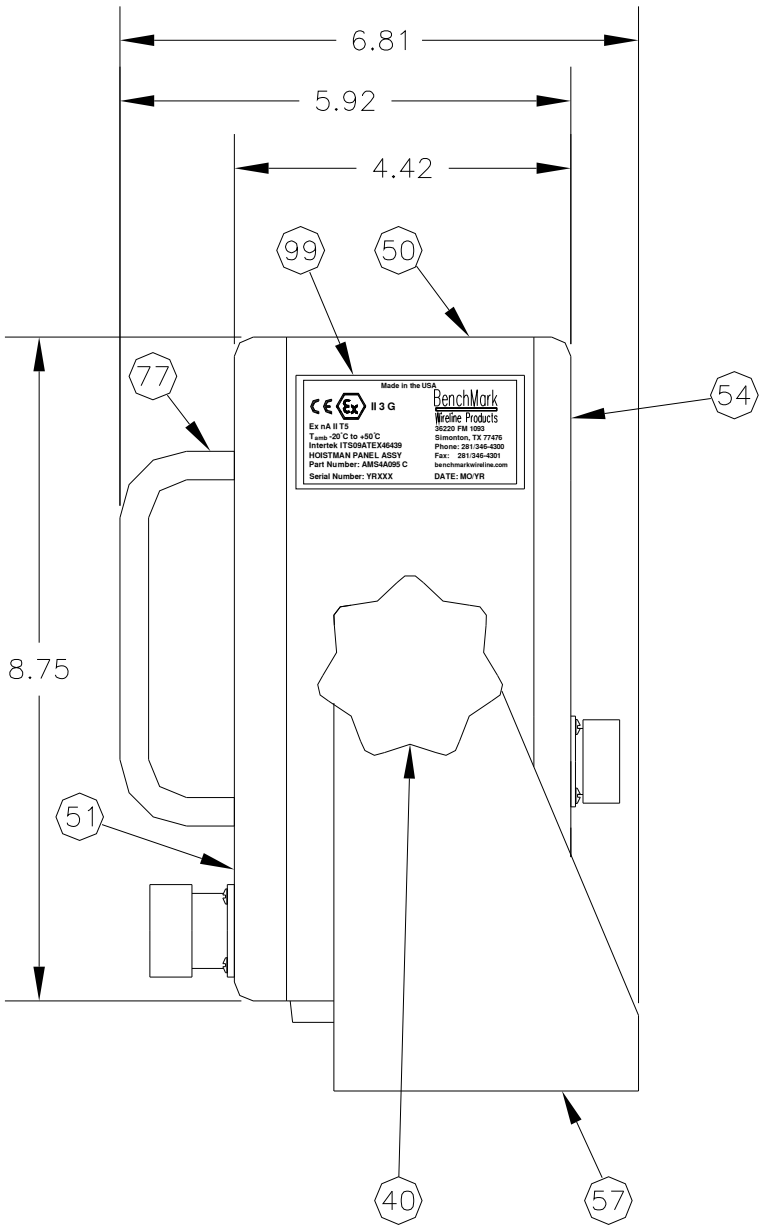
5.2 FRONT VIEW



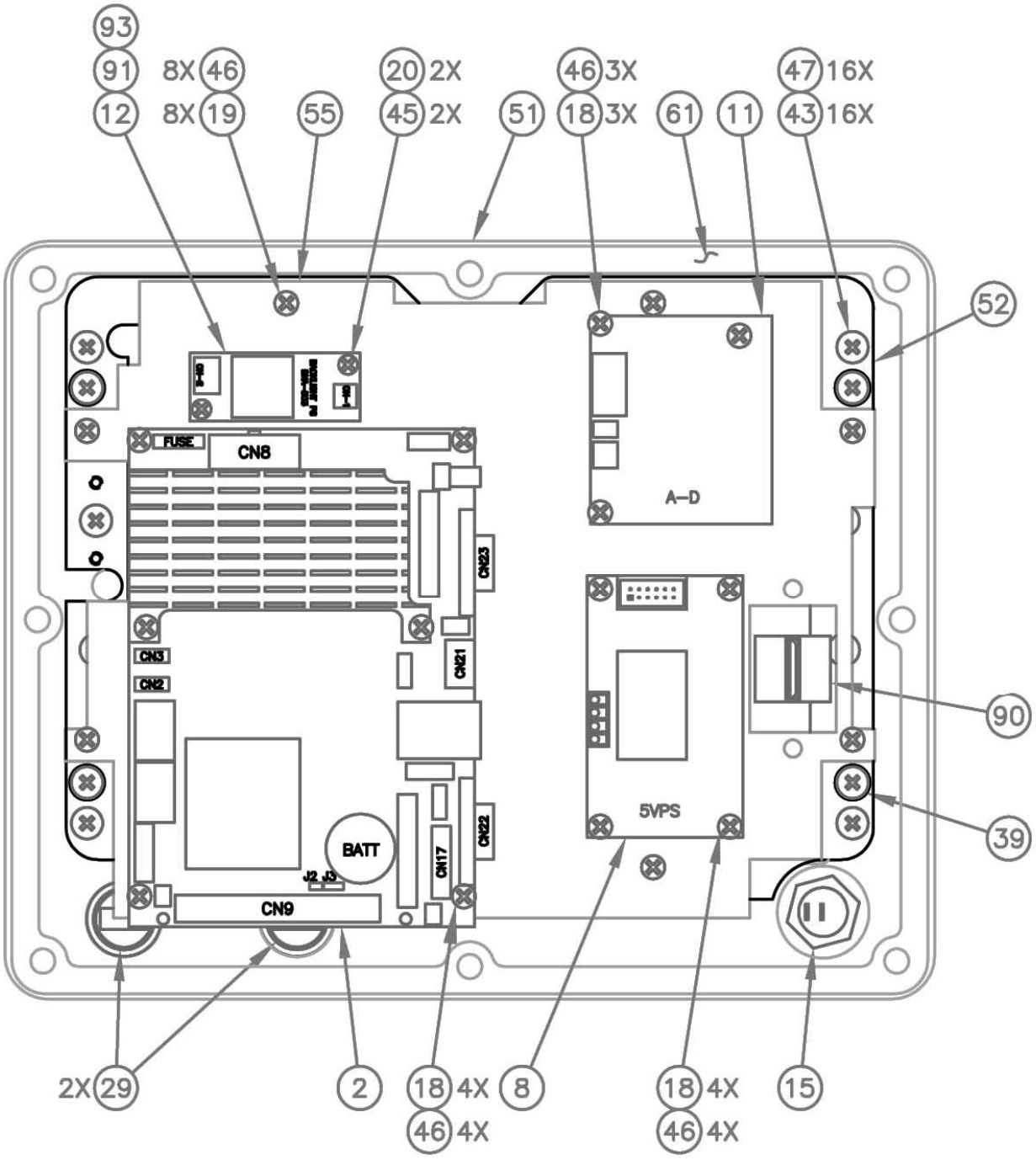
5.3 REAR VIEW


44 8X
37 8X
42 2X
40 2X
54
USB
SIG OUT
ENCODER
12–24VDC
TENSION CONTACT
– WARNING –
REMOVE POWER BEFORE DISCONNECTING
ALARM
LOAD CELL
BenchMark
26
32
70
24
31
69
36 24X
45 24X
4X 78
29
33
70
23
31
69
27
32
70
22
30
67
25
31
69

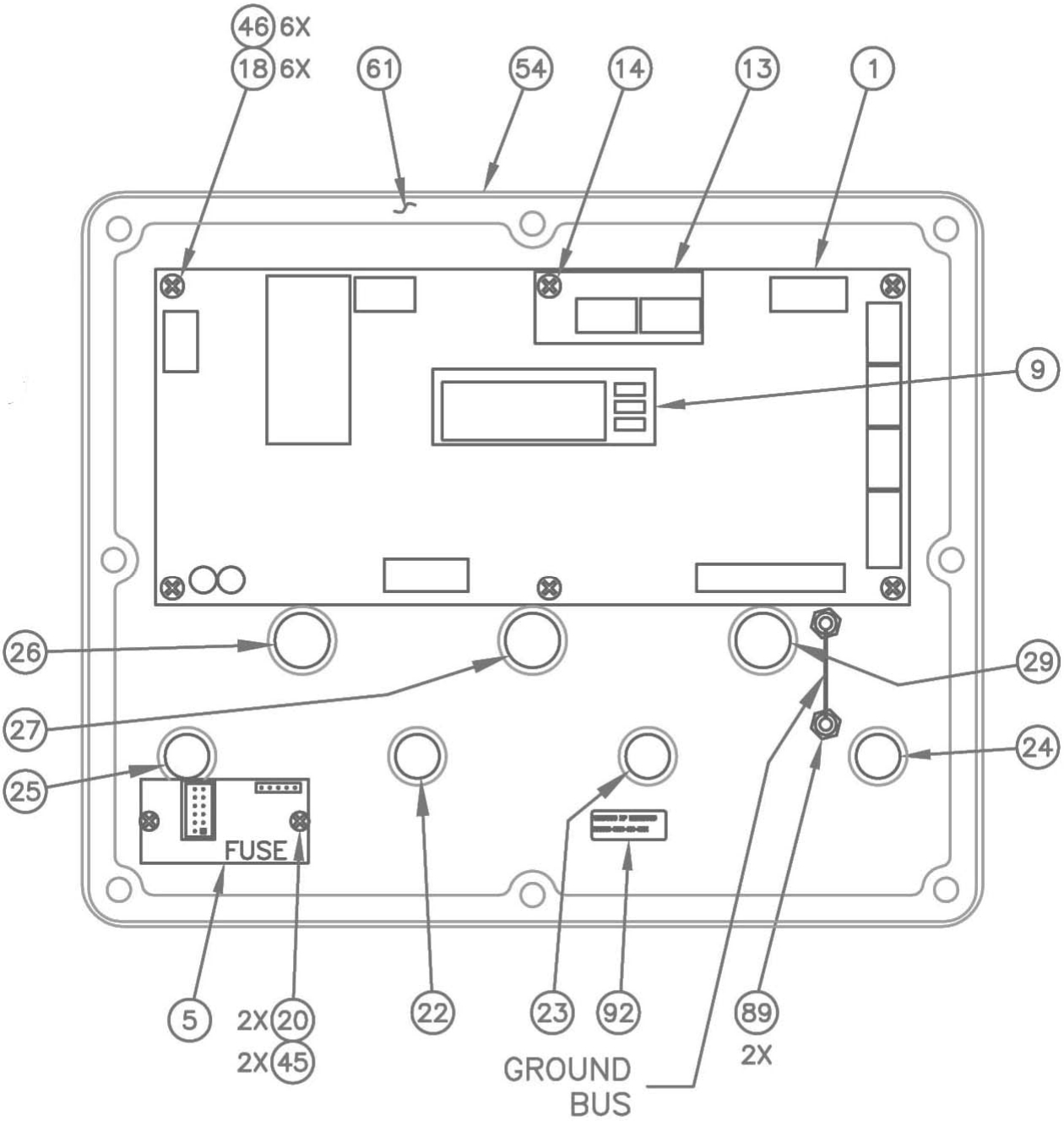
5.4 SIDE VIEW


6.81
5.92
4.42
99
50
77
54
8.75
51
40
57
Made in the USA
II 3 G
Ex nA II T5
T amb -20°C to +50°C
Intertek ITS09ATEX46439
HOISTMAN PANEL ASSY
Part Number: AMS4A095 C
Serial Number: YRXXX
BenchMark
Wireline Products
36220 FM 1093
Simonton, TX 77476
Phone: 281/346-4300
Fax: 281/346-4301
benchmarkwireline.com
DATE: MO/YR

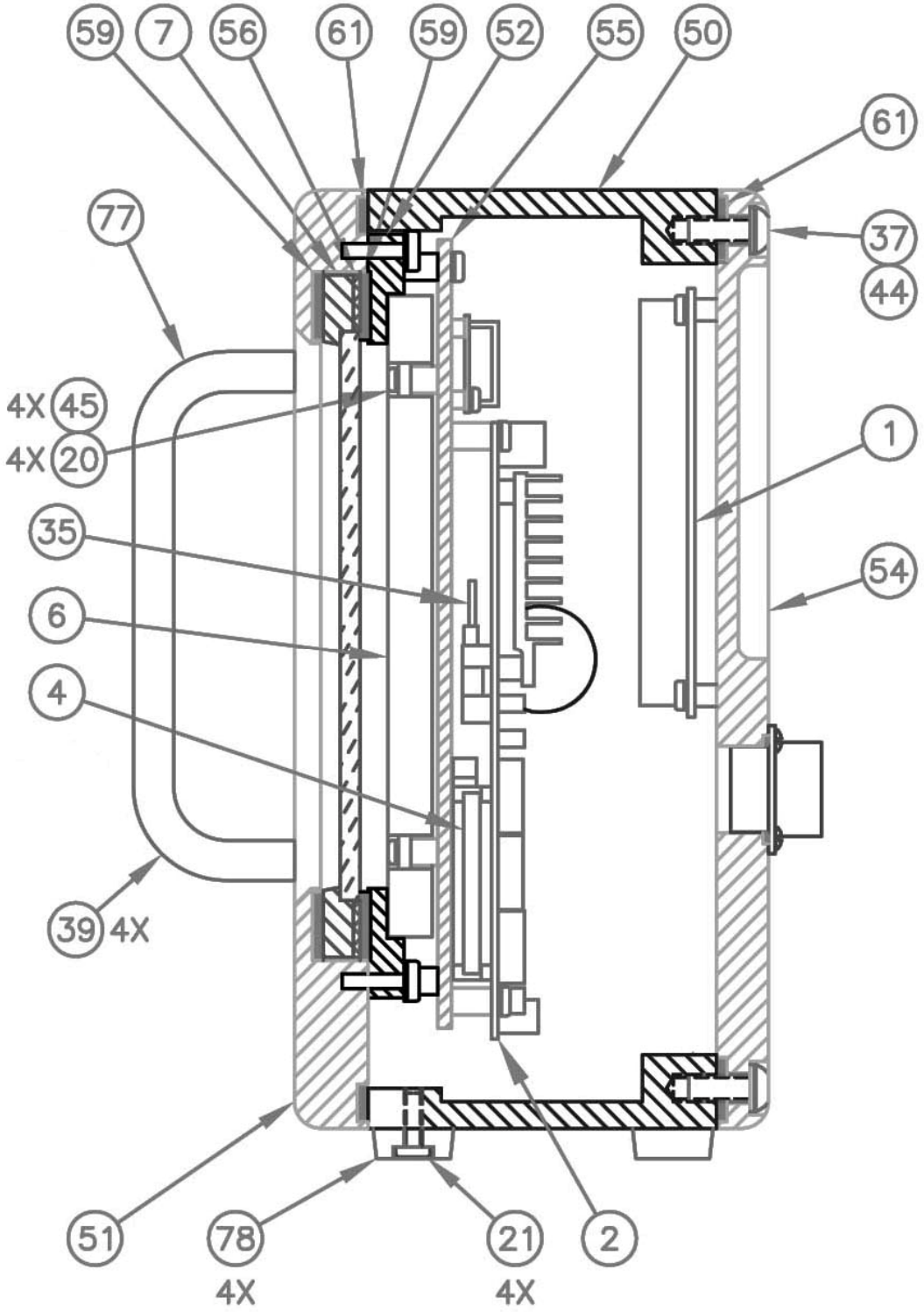
5.5 INTERNAL VIEW – FRONT



5.6 INTERNAL VIEW - REAR



5.7 INTERNAL VIEW – SIDE



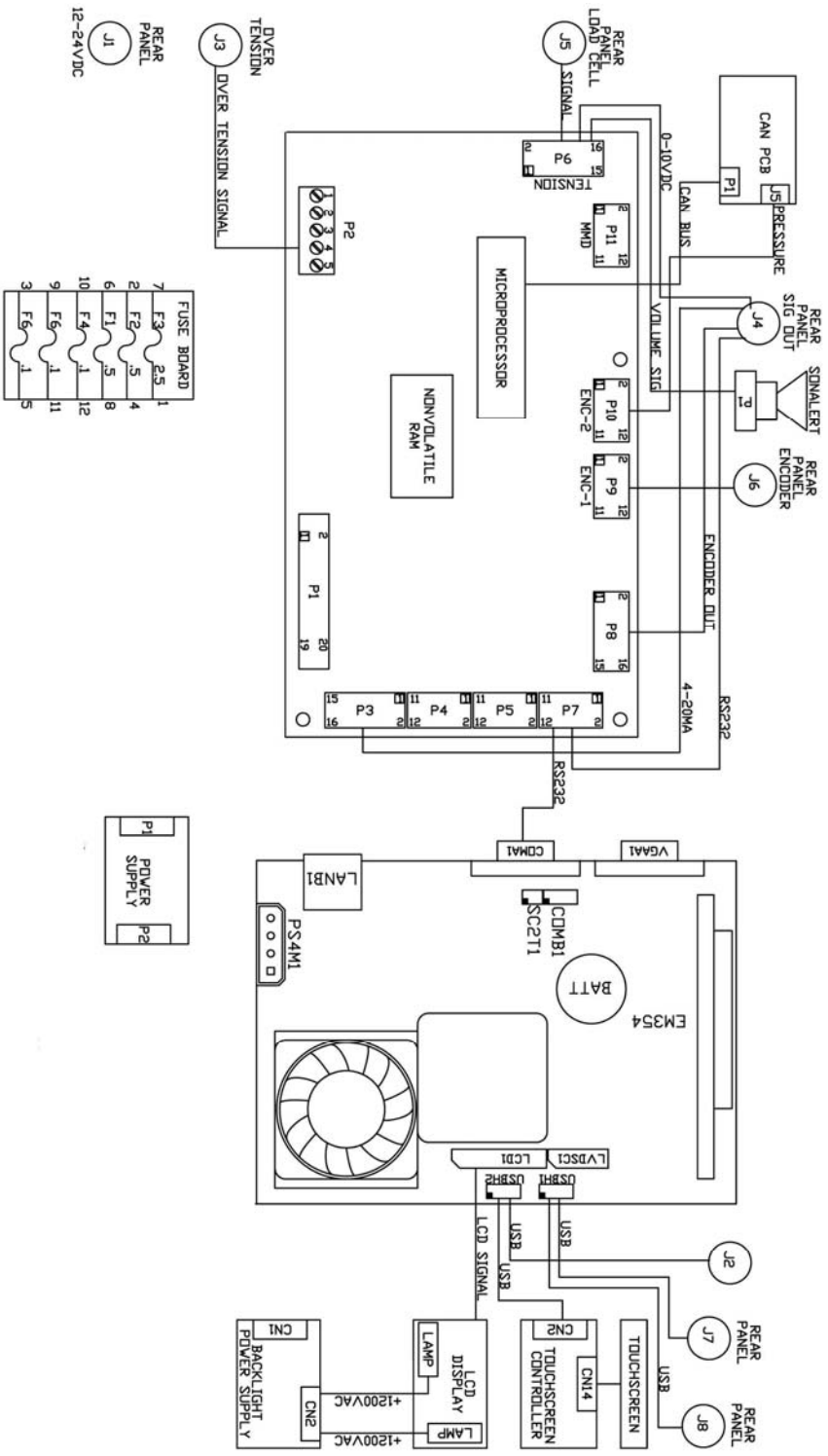
5.8 PARTS LIST

LINE NO.	PART NO.	DESCRIPTION	QTY	REFERENCE
1	AMS4P134E	PC BOARD AMS40 REV E W/2xRS232	1	
2	AMS5P015	COMPUTER SINGLE BOARD 1.6GHZ	1	
3	ALS4P015	CONN HOUSING CRIMP 3CKT .100	2	
4	AMS5P041	MEMORY COMPACT FLASH 4.0GB	1	
5	AMS4A102	PCB ASSY FUSE BOARD	1	
6	AMS4P843	LCD 8.4 COLOR TFT TRANSFLECTIV	1	
7	AMS4P845	SCREEN TOUCH 8.4" INFRARED USB	1	
8	AMS4A855	PCB ASSY PWR SPLY 5V 9-36V IN	1	
9	ALS4A204	PCB ASSY N CKT PROG W CAN	1	
10	SW-990201	SOFTWARE 99 PANEL 40 PCB	1	
11	AMS7A077	PCB ASSY A-D CAN 9X PANEL	1	
12	AMS4P906	INVERTER CCFL 5V IN 1200V OUT	1	
13	AMS4A889	PCB ASSY LEE PULL-UP	1	
14	AMS4P918	STANDOFF HEX M/F #6 7/16 LENGT	1	
15	AMS4P919	SWITCH PUSHBUTTON WATER PROOF	1	S1
16	AMS4P441	CONN 50-57-9005 SNGL RW 5CKT P	1	
17	AMS4P446	CONN 16-02-0097 CRIMP TERMINAL	5	
18	AMS1P040	SCREW 6-32 X 3/8 PHIL PAN SST	17	
19	C276P331	SCREW 6-32 X 1/2 PHIL PAN SST	8	
20	AMS8P091	SCREW 4-40 X 1/4 PHIL PAN SST	6	
21	AM5KP184	SCREW 8-32 X 3/8 PHIL PAN SST	4	
22	AMS4P263	CONN KPSE02E10-6P RECEPTACLE	1	
23	AMS4P179	CONN KPSE02E12-3S RECEPTACLE	1	O-T CONTACT
24	AMS4P169	CONN KPSE02E12-3P RECEPTACLE	1	POWER IN
25	AMS4P171	CONN KPSE02E12-10S RECEPTACLE	1	LOAD CELL
26	AMS4P172	CONN KPSE02E14-12S RECEPTACLE	1	ENCODER
27	AMS4P875	CONN KPSE02E14-19S RECEPTACLE	1	SIG OUT
28	ALS4P019	CONN HOUSING CRIMP 2CKT .100	1	J5 OF PRESS IN/OUT
29	AMS4P990	CONN USB MS TYPE PNL MNT PCB	3	
30	AM5KP034	DUST CAP KPT8110C RECEPT	1	
31	AMS4P188	DUST CAP KPT8112C RECEPT	3	
32	AMS4P191	DUST CAP KPT8114C RECEPT	2	
33	AMS4P924	DUST CAP USB CONN MS TYPE	3	
34	C276P165	FERRULE 18 AWG WHITE ALTECH	21	
35	AMS5P076	MEMORY RAM 2GB DDR2 SODIMM	1	
36	C276P143	SCREW 4-40 X 3/8 PHIL PAN SST	32	
37	AM5KP117	SCREW 1/4-20 X 5/8 BTN HD SST	16	
38	C276P138	SCREW 1/4-20 X 1/2 FH SOC SST	6	
39	AMS4P872	SCREW 10-32 X 1 PHIL PAN SST	4	HANDLES

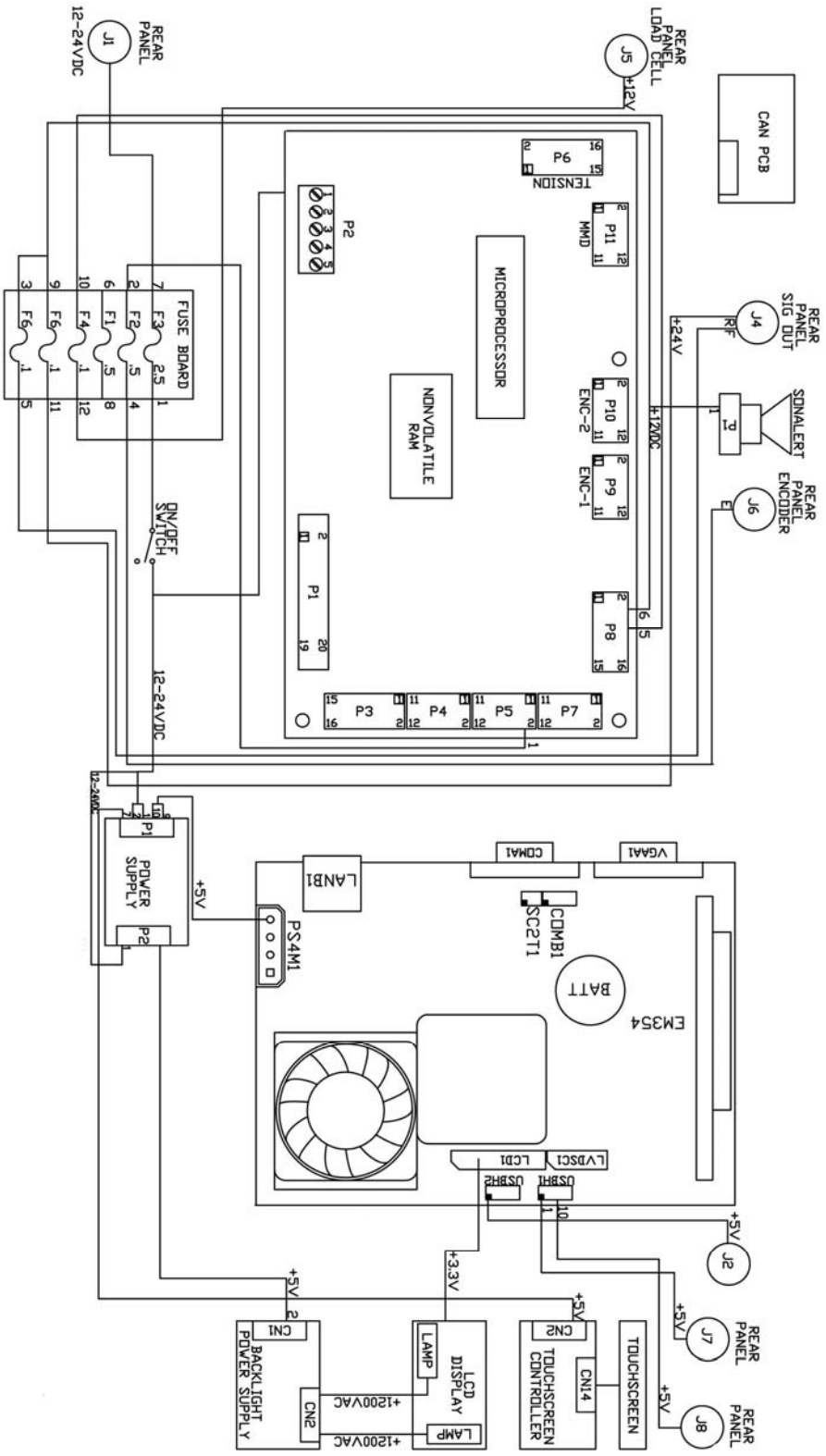
40	ALS6P050	KNOB HAND BLACK 1/2-13 SST	2	
41	AMS1P066	WASHER 1/2 LOCK SS	2	
42	C276P037	WASHER 1/2 FLAT SST	2	
43	AMS8P093	SCREW 10-32 X 5/8 PHIL PAN SST	16	
44	AMS5P025	WASHER 1/4 FLAT NYLON 6/6	16	
45	AMS8P036	WASHER #4 LOCK SST	36	
46	C276P046	WASHER #6 LOCK SS	25	
47	C276P035	WASHER #10 LOCK SS	16	
48	AMS4A374	CABLE ASSY ADVANTECH VIDEO	1	
49	AMS5P044	WASHER NYLON 6-32 .140 IN	8	POWER SUPPLY PCB
50	AMS4M195	ENCLOSURE WLDMT PORTABLE SL 95	1	
51	AMS4M196	PANEL FRONT LCD BEZEL	1	
52	AMS4M161	CLAMP TOUCH SC PRTBL SL 95	1	
53	SW-AMS4A099-201	SOFTWARE FOR THE 99 CMPT FLASH	1	
54	AMS4M194	PANEL REAR PORTABLE SL 99	1	
55	AMS4M163	PLATE MT PCB PORTABLE 95	1	
56	AMS4M171	SPACER GLASS TS PRTBL SL 95	1	
57	AMS4M098	YOKE PIVOT 8.75 X 10.75 PNL	1	
59	AMS4M159	GASKET TOUCH SCREEN PRTBL 95	2	
61	AMS4M097	GASKET FRONT & REAR 95 PANEL	2	
67	C276P041	O-RING 2-017 BUNA N	2	
69	AM5KP219	O-RING 2-019 BUNA N 70D	3	
70	AMS4P921	O-RING 2-021 BUNA N 70D	5	
77	F244888000	HANDLE OVAL 1-1/2 X 4-9/16 AL	2	
78	ALS3P030	BUMPER RECESSED 3/4OD X 9/32H	4	
80	AMS2P023	CONN 102540-3 AMP 10 POS FRONT	1	102540-3
81	AMS2P022	CONN 102536-3 AMP 10 POS BACK	1	
83	AMS7P021	CONN 102398-4 AMP 12 POS PCB	8	
84	AMS7P023	CONN 102536-4 AMP 12 POS BACK	8	
85	AMS7P024	CONN 102681-1 AMP 12 POS FRONT	8	
86	AMS7P026	CONN 102536-6 AMP 16 POS BACK	2	AMP 102536-6
87	AMS7P022	CONN 102398-6 AMP 16 POS PCB	2	
88	AMS7P025	CONN 102681-3 AMP 16 POS FRONT	2	
89	AMS4P861	TERMINAL INSULATED SOLDR 6-32M	2	
91	AMS4P907	CABLE INVERTER 5V CCFL INPUT	1	
92	AMS4P319	LICENSE WINDOWS XP EMBEDDED	1	
93	AMS4P908	CABLE INVERTER CCFL OUTPUT	1	
94	AMS4P590	KEYBOARD USB MINI TOUCH BLACK	1	ACK-540UB
99	AMS4M691	LABEL HOIST PNL Z2 Ex nA	1	

6.0 WIRING DIAGRAMS AND SETUP PROCDURES

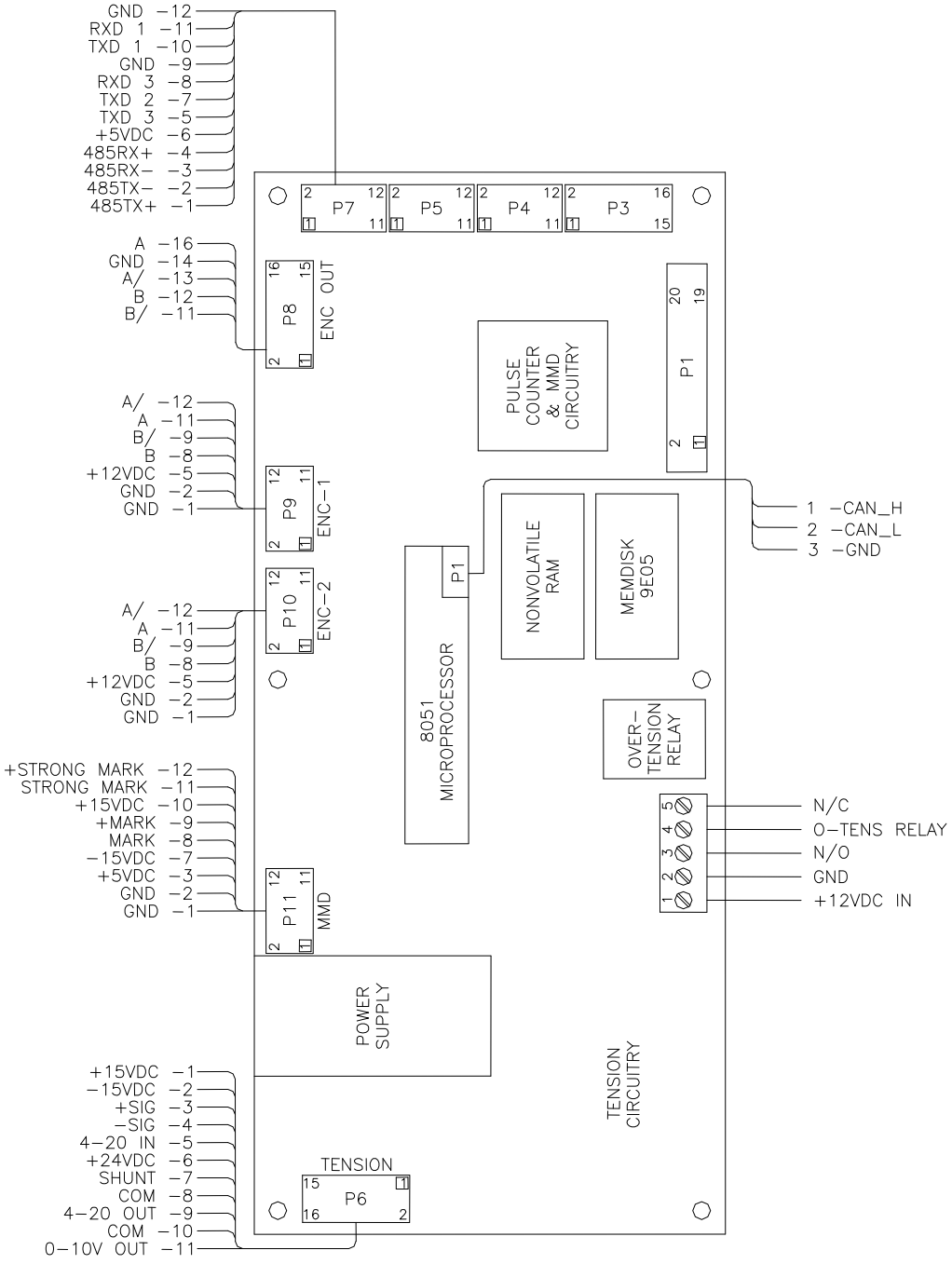
6.1 SIGNAL WIRING DIAGRAM



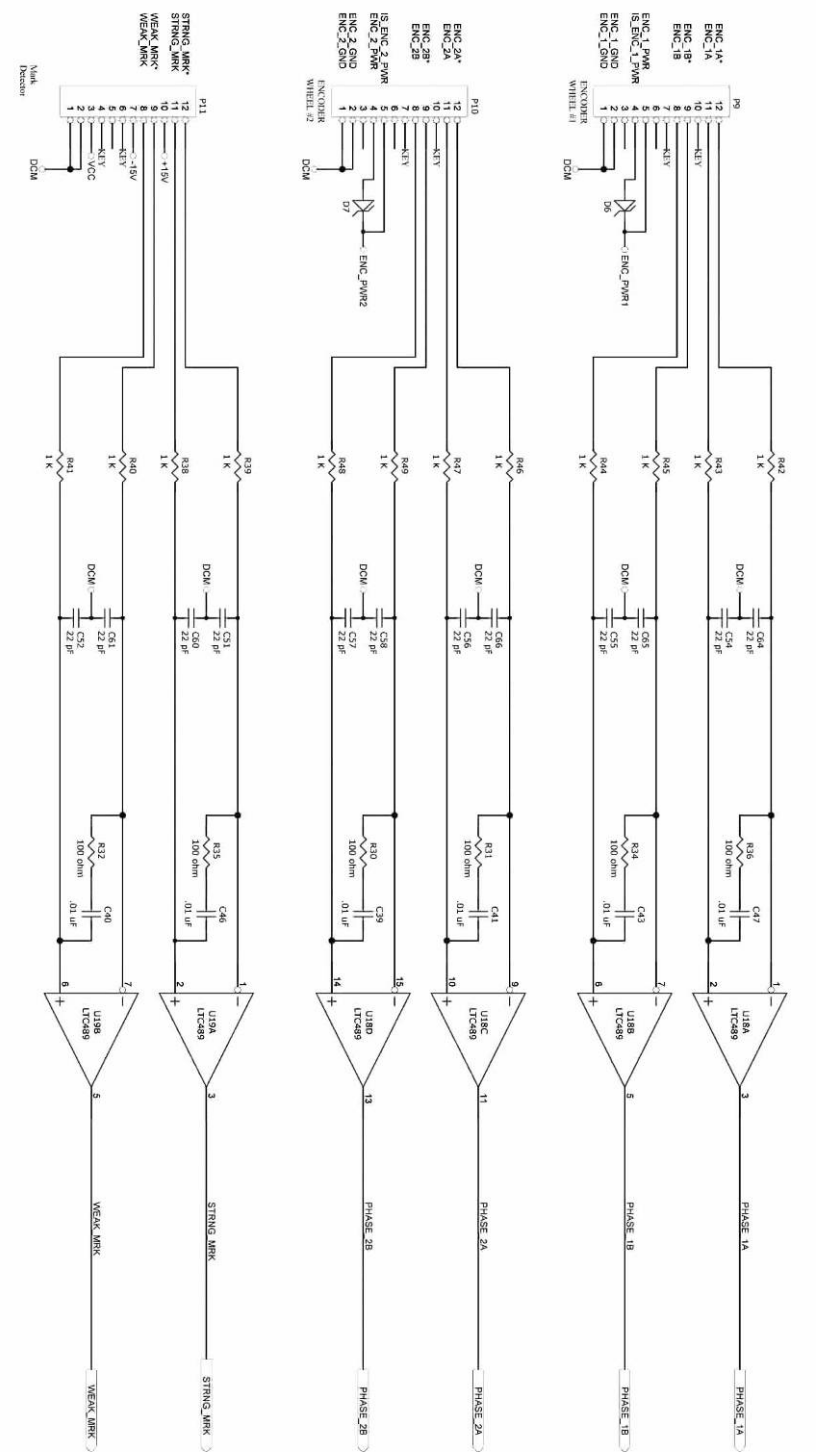
6.2 POWER WIRING DIAGRAM



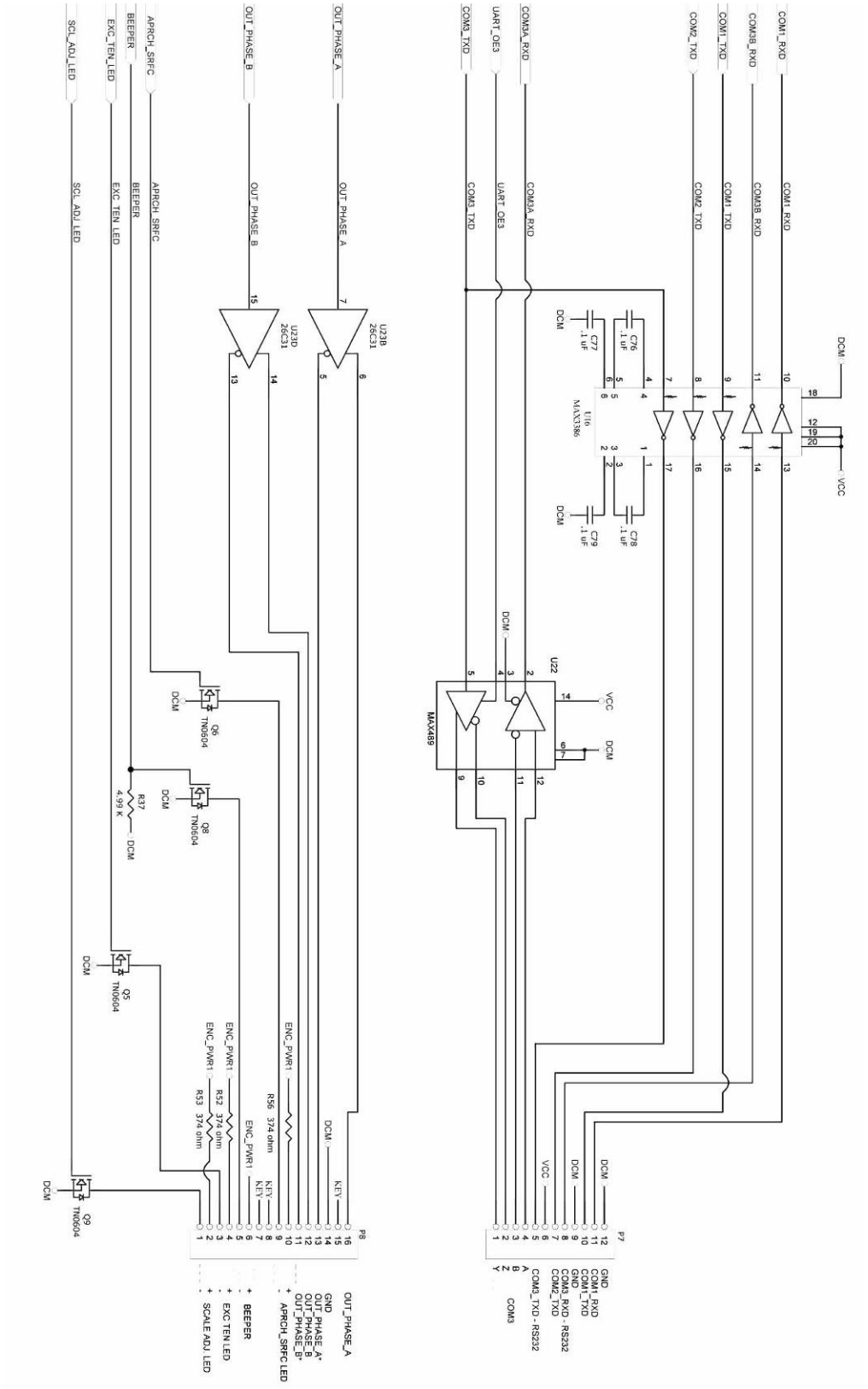
6.3 Real Time Processor Board Pin Out



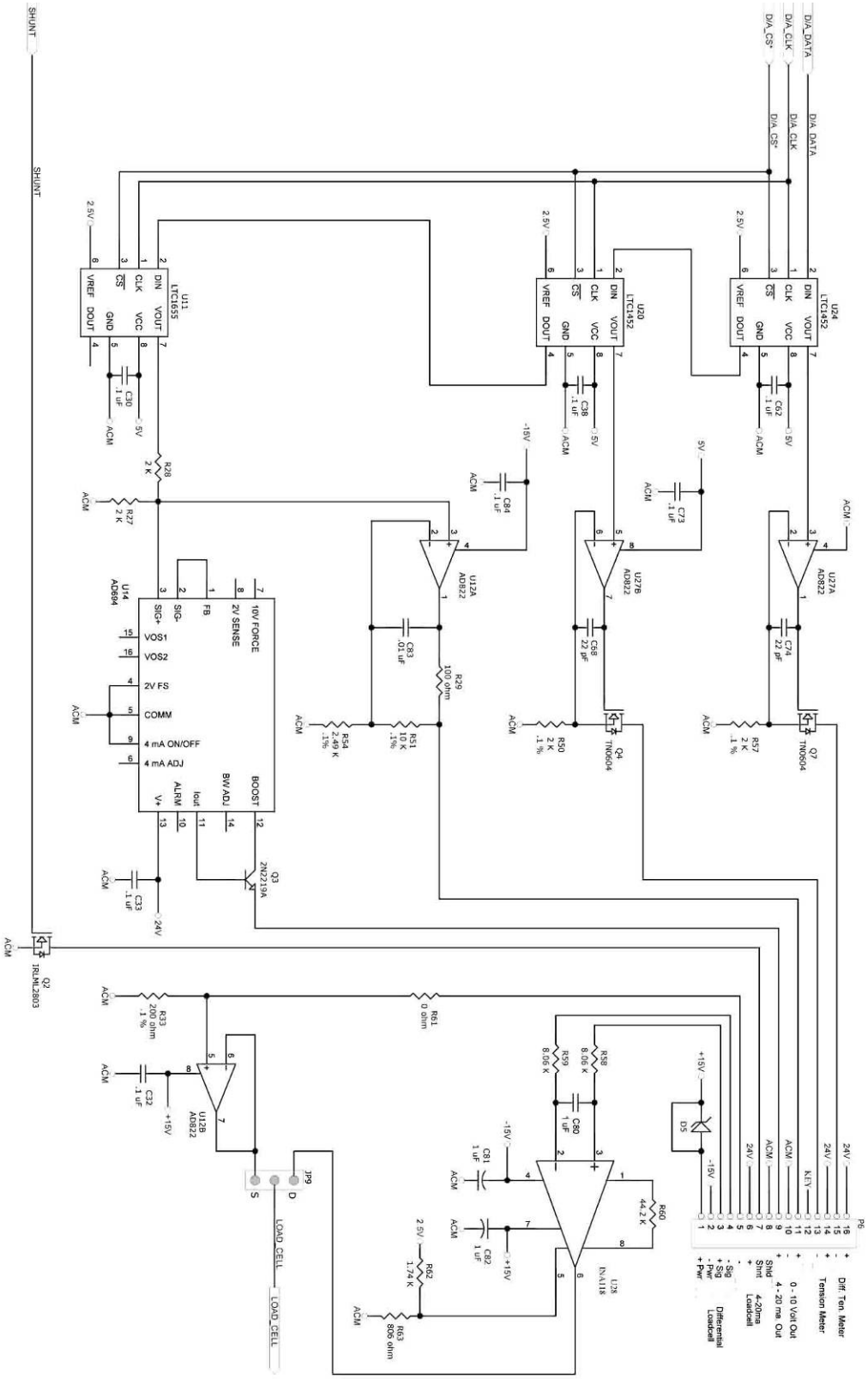
6.4 ENCODER INPUTS



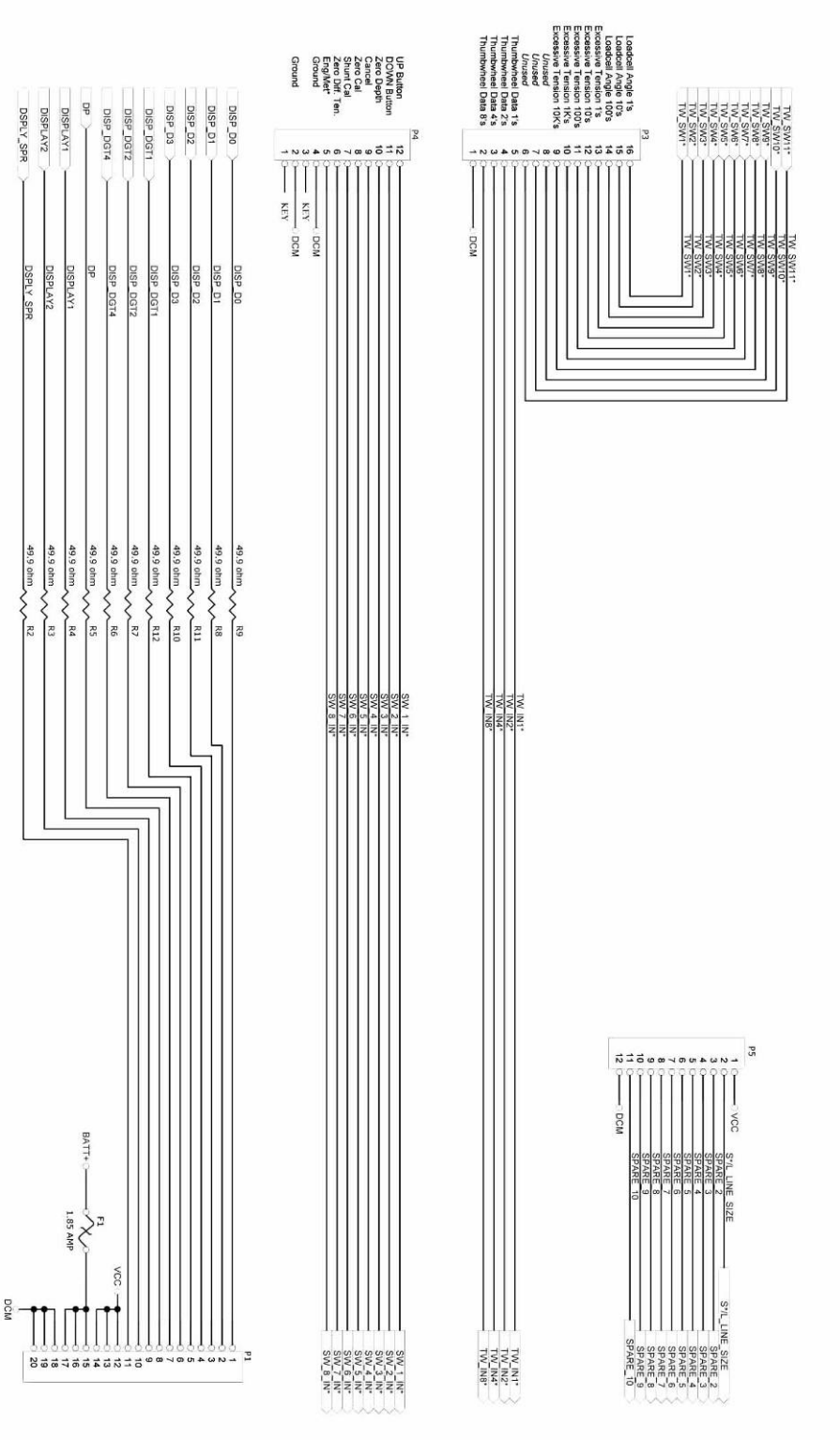
6.5 ENCODER OUTPUT AND COM PORT I/O



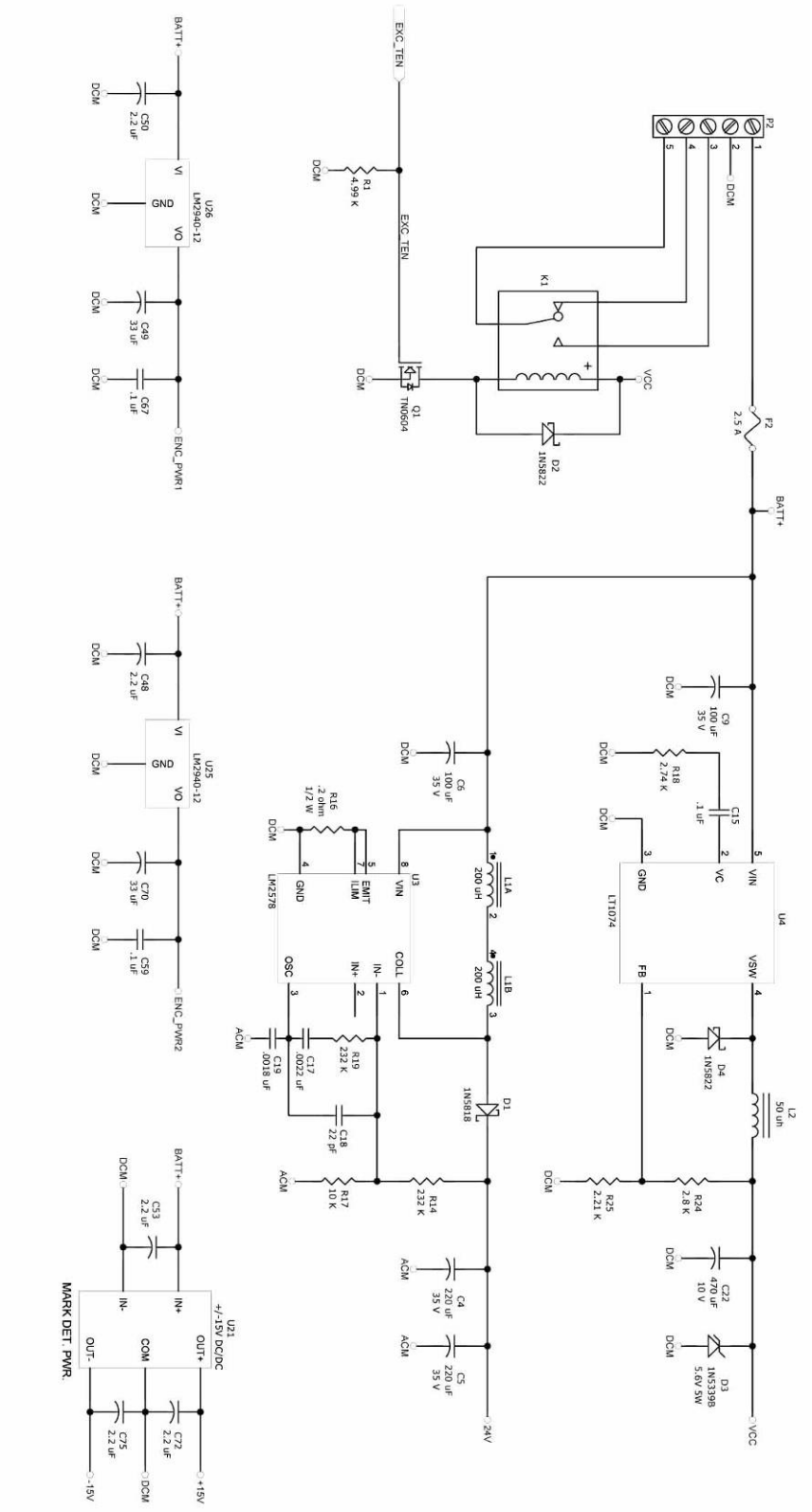
6.6 LOAD PIN AND TENSION I/O



6.7 JUMPERS – BUTTONS

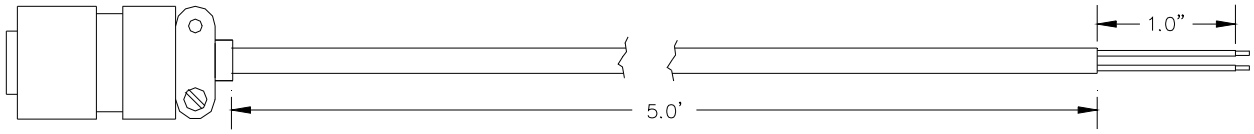


6.8 POWER SUPPLIES



7.0 CABLES

7.1 AMS4A827 CABLE ASSEMBLY – DC POWER IN

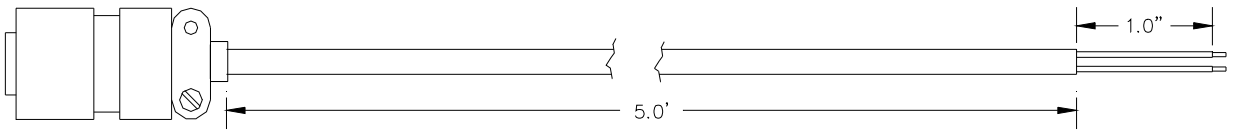


A – WHITE
B – BLACK

A = +
B = -

Part Number	Description	Qty	UM
AMS4P177	CONN KPSE06J12-3S STR PLUG SOCKET	1	EA
AMS7P061	CABLE 16-2 SJ CORD	25	EA

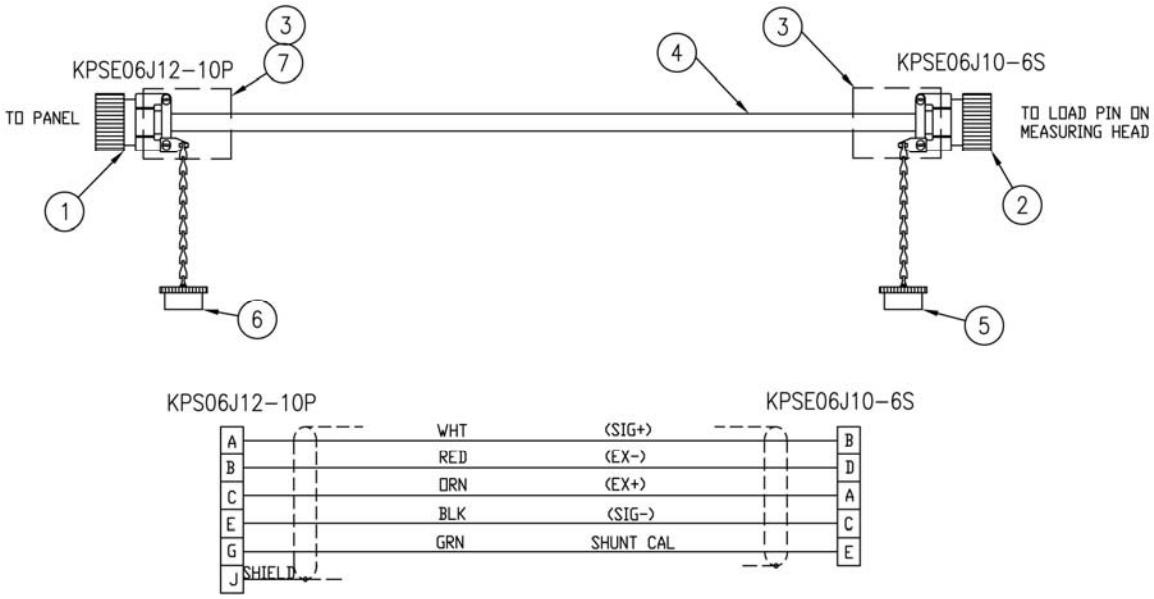
7.2 AMS4A826 CABLE ASSEMBLY – OVER TENSION SHUTDOWN



A – WHITE
B – BLACK

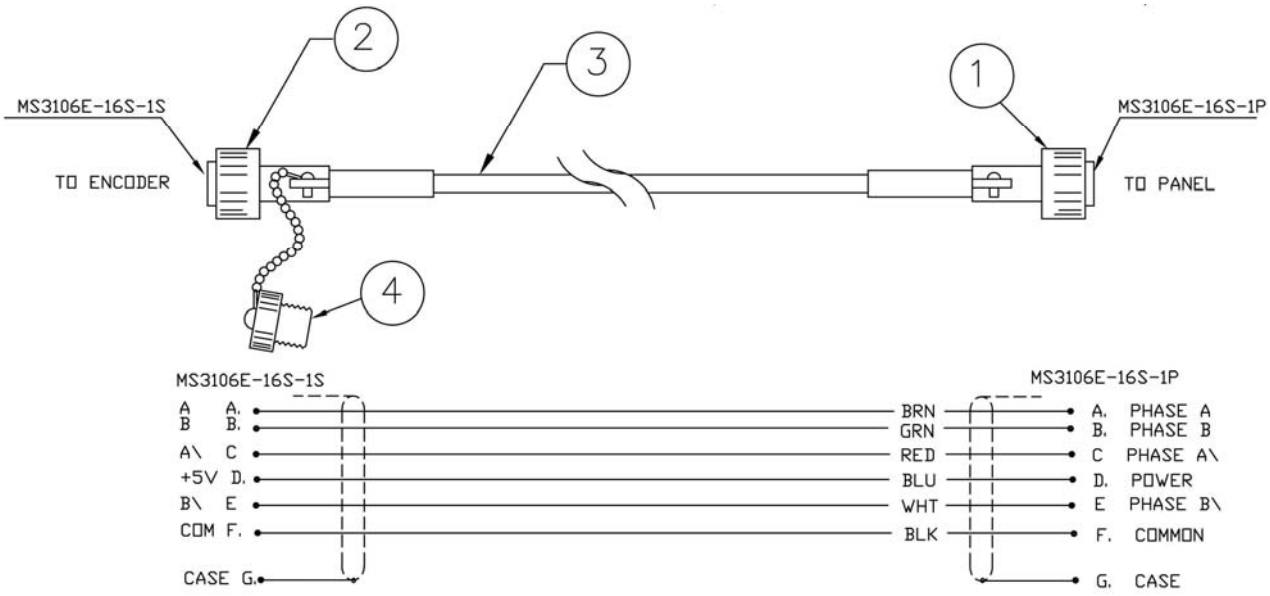
Part Number	Description	Qty	UM
AMS4P178	CONN KPSE06J12-3P STR PLUG PINS	1	EA
AMS7P061	CABLE 16-2 SJ CORD	30	EA

7.3 ALS8A013 LOAD PIN IN CABLE



Part Number	Description	Qty	UM
AMS4P181	CONN KPSE06J12-10P	1	EA
AMS4P266	CONN KPSE06J10-6S	1	EA
AMS4P221	CABLE 20/8C ALPHA 25468 BLACK	30	FT
AM5KP059	DUST CAP KPT8010C	1	EA
AM5KP070	DUST CAP KPT8012C	1	EA

7.4 AMS4A127 ENCODER IN CABLE



Part Number	Description	Qty	UM
AMS4P183	CONN MS3106F-16S-1P	1	EA
AMS4P184	CONN MS3106F-16S-1S	1	EA
AMS4P221	CABLE 20/8C ALPHA 25468 BLACK	30	FT
AM5KP113	DUST CAP MS25042-16DA	1	EA